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June 2008
An Environmental History of the Otago Peninsula

Dialectics of ecological and cultural change from first settlement to 1900

Jonathan West

A thesis submitted for the degree of Doctor of Philosophy at the University of Otago, Dunedin, New Zealand

25 July 2009
Abstract

This environmental history explores dialectics of ecological and cultural change on the Otago Peninsula, from first human settlement to 1900. It argues that Maori and European systems of property defined the shifting economic and ecological boundaries both between people, and between people and their natural environment.

Maori and European settlers made similar initial impacts on the Peninsula: depleting a narrow band of resources. This reflected ecological ignorance and a lack of agreed property rights. Subsequent trajectories of ecological change on the Peninsula reflected the development of distinctive property rights regimes. Maori developed flexible and functional property rights that shifted to match their ecological relationships with different places and species. Such property rights underpinned Maori stewardship of their lands and resources. After Europeans arrived in search of commodities, Maori desire to maximise trade with them drove the formation of new ecological relationships. As resources became market commodities, the Otago Peninsula became a trading port, and settlement in the area intensified. Europeans and Maori mingled on the Peninsula, and their mutual accommodation required new property agreements.

The 1844 sale of the Otago block split control over the Otago Peninsula. Europeans divided their portion into a clearly defined mosaic of suburban properties and small farms, but regarded all other aspects of the ecology – fisheries, the foreshore, and wild game – as held in common. To improve their properties, settlers rapidly eradicated the existing ecology. Europeans established an agrarian ecology dominated by grasses and dairy cows. Some owners did retain a small patch of forest for fuel, timber, and feed. In 1868 Maori divided their portion into private properties, designed to maximise access to a variety of environments, especially the coast. Their properties, however, were impractical farms, and they were denied control over the coast. By 1900 Europeans leased most of the Maori land as unimproved grazing land. With lesser property rights, they were unwilling to expend as much effort. These areas therefore retained more substantial and intact tracts of forest, wetlands, and tussock.
Acknowledgements

The inspiration for this thesis is now quite lost to me. I cannot recall how or when I realized telling some of the stories of the Otago Peninsula could make for wonderful environmental history. But I know to whom credit is due for encouraging me to devote myself to the task: thanks to Richard Reeve, for his immediate certainty that such a project was valid and valuable, and Tom Brooking for accepting I could be the person to attempt it.

Whatever the faults of the result, it would have been a great deal poorer without the willing help of very many other people. I cannot thank you all enough.

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Introduction

1.1 Overview

Muaupoko, the Otago Peninsula, juts obliquely from the eastern coast of the South Island of the New Zealand archipelago at 45° south. This small finger of approximately 24,000 acres of land has seen continuous human settlement since soon after Maori migrated from Eastern Polynesia.¹ Te Rapuwai, Waitaha, Kati Mamoe, and Kai Tahu have all lived here, and their descendents continue to do so. From 1770 explorers, sealers, and flax traders of various nationalities had glancing encounters with the Maori on the Peninsula. Between 1831 and 1840 shore whalers operated seasonally, and a nascent community began to take shape that mingled elements of Maori and European cultures.² In the land sale of 1844 the Otago Peninsula was divided between Maori, who retained their ‘reserve’ on the northern Peninsula, and Europeans who, in the wake of the first Scots settlers’ arrival in 1848, came to dominate the demographics and character of human inhabitation over the southern Peninsula. From this point, the Peninsula contains two contrasting histories of cultural interaction with the environment.

This environmental history describes dialectics of change upon the Otago Peninsula from first Maori settlement until the close of the nineteenth century. Its argument begins, as does all environmental history, with the premise that people and their world evolve in concert. People everywhere and always seek to make their world in their own image. This is most evident perhaps in the actions and attitudes of migrants: unsettled people most urgently need to make themselves at home. Maori and

¹ Because of its time frame, and the sources involved, this thesis uses acres rather than hectares as its primary unit of land area. A hectare is 2.47 acres. For the purposes of this study the Peninsula is defined by a line drawn across its isthmus between Andersons Bay and St Kilda Beach, in the lee of Lawyers Head. This is the geological boundary of the Peninsula.
² Any binary division such as ‘Maori’ and ‘European’ is obviously a very blunt distinction and cannot fail to be anachronistic or misleading in some sense. A handful of groups of ‘Maori’ inhabited the Peninsula over several centuries; ‘European’ lumps together another diverse set of groups of people, who arrived in a far more concentrated pulse. Southern ‘Maori’ did not identify as such until after encountering the people they initially called ‘takata pora’. ‘Pakeha’ was initially a northern Maori term for foreigner; it was only adopted by southern Maori around the mid nineteenth century. This thesis generally tries to avoid anachronism, by adopting the usage of the time in question.
European immigrants to the Peninsula have each tried to create idealized societies and environments derived from their old world. Yet the Otago Peninsula's environments have responded in complex and often unpredictable ways to people's efforts to impose a cultural order. The Peninsula's inhabitants were intensely interested and intimately involved in the consequences of such changes. Their evolving responses to the process of encountering the Peninsula have been equally unpredictable, unintended, and unforeseen. Encounter has made something different of both people and place. What happened here, as elsewhere in New Zealand, was something nobody counted on.

Environmental history has to strike a delicate balance, incorporating change in both nature and culture without interpreting either as simply a function of the other. To understand the full impacts of ideas, objects, and organisms, we need to treat all as integral elements in a complex interplay of environmental and cultural relationships. This thesis therefore adopts the stance, signalled in its subtitle, that change over time in nature and culture must be considered as an historical dialectic driven by the interplay between these two forces. The contradictions, and therefore confrontations, between the world as it is (in a word, nature), and as we desire it to be (culture) are the driving dynamics of environmental history. As Donald Worster puts it, the study of environmental history therefore regards nature as participating in an unending dialectic with human history, seeing the two, that is, as intertwined in an ongoing spiral of challenge-response-challenge, where neither nature nor humanity ever achieves absolute sovereign authority, but both continue to make and remake each other.

According to this outlook, the ecological effects of organisms are not simply natural occurrences, but are equally culturally and politically defined. Both culture and politics, on the other hand, must make accommodation with and adjustment to, the circumstances of a changing ecology. The task, then, is to try to explicate the interwoven dynamics of environmental, social and economic change, while avoiding a collapse towards either environmental or cultural determinism.

The central argument of this thesis is that examining the structure of property systems provides a lens through which to uncover how different societies structure their environmental relationships. The thesis examines how Maori and European settlers developed very different systems of property that shaped very different material and ideological interactions with their environments.

A simple yet clear and powerful definition of property rights is adopted: a property right is a recognised relationship between one person (or persons) and other persons, respecting access to resources. A property claim is an attempt to have such a right recognised as legitimate according to a society's system of property. Property rights can be claimed over any aspect of the world, material or intangible. Their defining characteristic is that they involve people asserting their right to restrict other people's access to, or use of, an aspect of the world.

Defined in this way, all property rights seek to determine the shape of a triangular relationship: they involve people asserting claims to something, over and against other people. Because property rights are assertions of the power to allocate resources, they have an inherently political and social character. That is, property rights are closely tied to—and indeed partially determinative of—social and political relationships. Equally importantly, they reflect ecological relationships: the effort that people put into transforming parts of the world into resources is closely tied to what they regard as their own. Property rights are thus an expression of conceptions of people's (and peoples') relations with both one another and their world.

Studying property systems therefore provides a powerful lens through which to examine how people in a community organise their relationships with one another, with other groups, and with the different animals and plants they try to incorporate or exclude from their lives. Indeed, systems of property are perhaps the most organised expression of people's relationships with each other and their world. As such, they are powerful causes of ecological and cultural change in their own right.

Maori and European systems of property and tenure of resources have shaped where and how particular groups of people have made themselves at home, which elements
of the Peninsula were harvested from or cultivated upon, and by whom, which places became routes of travel, or are more or less wild. Here, as elsewhere, uncovering the operation of property systems and tenure to resources reveals the patterns of human endeavour within nature's economy: they show us the blueprint of our desire, the circuits that channel our energy and our activity.

The questions that this research seeks to answer are therefore directed to how discussion of property rights can illuminate the dialectic between nature and culture that is the core of environmental history. The most general questions that the thesis addresses are, first: what do their respective property systems tell us about the ways the social, economic, and ideological structures of Maori and European society shaped their initial settlement on the Otago Peninsula? Second, in what ways have these property systems shaped their interactions with this particular environment? Third, how did property systems change over time, and what insights can the story of such changes provide into the ways attitudes and ideologies shifted to accompany the unfolding of environmental change?

Lines of inquiry radiate out from these primary questions. One of the most significant lines of inquiry is to examine the issue of whether we can trace an evolution in property systems that parallels an evolution in environmental relationships on the Peninsula. We might expect, for example, that in the early stages of interaction of first Maori and then European colonisation, when the Peninsula was part of a frontier of settlement that agreed property rights were lacking. If this was the case, was it associated with an inability to regulate or control the exploitation of resources? As property systems were imposed that established a fabric of agreed rights across the landscape, is there evidence that resources were exploited in more sustainable ways? If so, does this suggest anything about the conditions that must be met for property systems to exert that influence?

Another crucial set of questions is concerned to uncover the role that contrasting property systems played in mediating cultural contact, and in turn to investigate how contact transformed those property systems. The first wave of contact occurred with the arrival on the Peninsula of European resource hunters and traders. It involved the beginnings of the process whereby Maori made a transition from a subsistence, to a
market economy, as some resources became significant as tradable commodities. The second, and much larger wave, occurred once land itself became a tradable commodity. The environmental history of the Otago Peninsula is an ideal field from which to study the transformation of property systems that occurred as a result of these waves of contact, because it was the primary site where contact between Maori and European was mediated in Otago.

As Angela Wanhalla has noted, scholars have begun to recast encounter contact as ‘dialectical in nature, involving interactions that were contested and negotiated.’ A critical part of those dialectical negotiations was to determine the structure of property rights understood by each party. We need to ask, therefore, whether the sealers who were the first group of Europeans to negotiate contact with Otago Maori, for example, owed anything to Maori in return for taking seals from their coasts. Some writers have asserted that Maori believed so; the sealers certainly did not. This may have been one reason for some of the violent clashes between Maori and sealers. Such conflict certainly made hunting resources in southern New Zealand risky. How then did Europeans gain rights to take resources that were recognised as legitimate by Maori? Who controlled these transactions, and what did they seek to gain from them? What were their consequences? The focus of such questioning is to uncover the accommodations to different property rights systems that each culture made in mingling on the Peninsula, and then to ask: what political, social, and ecological, consequences did these accommodations have?

Maori transactions, for example, were traditionally based on political alliances between leaders; these imposed ongoing reciprocal obligations, based on honour. Maintaining them required mutual adjustments over time. Accordingly, most European whalers formed alliances with Maori women. These alliances were graded according to rank, with leading whalers partnering women of high status. This helped link their interests, and legitimised the whalers’ presence. However, the extractive economy of resource-hunting Europeans was inherently transitory it was not conducive to stable long-term relationships. They typically did not recognise their

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7 For example, Bill Dacker, He Raraka a Ka Awa, (Dunedin: Hocken Collections, 2000) p45
8 Eddie Durie, “Custom Law” (Wellington: Waitangi Tribunal Library, 1994), p57
transactions with Maori as imposing ongoing obligations. They were surprised to find Maori requesting further payments for what they regarded as concluded business. Further, the attempt to interlink their interests often had unexpected downstream ecological, social and political consequences. Many Maori women became exposed to a range of diseases, so that some became infertile, or died. Accommodating the ‘half-caste’ descendents of other such unions disrupted traditional property rights, and could generate conflict in the context of limited and inadequate lands.9

The second and by far the most fundamental collision of different property systems occurred once Maori were forced to confront the prospect that their lands might become the permanent property of other people, who would seek to exclude them from it. This collision was precisely focused on the Peninsula, the northern end of which was the largest area Otago Maori managed to reserve from the initial sale of land that opened the way to large-scale European colonisation in the region. In interrogating the role of property systems in the subsequent dialectic of environmental and cultural change, this research asks: Why did Maori agree to sell land, and how did they conceive of these transactions? What were the consequences of selling most of their land for Maori? In particular, to what extent could their traditional property systems survive intact? What systems of property did Europeans then impose on the Peninsula? In particular, why did Europeans seek not only to establish their own property rights over their portion of the Peninsula, but also to make Maori conform to those systems of property rights?

The research then seeks to uncover the consequences of these transformations in property systems. How much control did Maori manage to exert over changes made to their property systems? What adaptations to their traditional social and economic structures occurred as a result of these changes? How was the activity of Europeans and Maori reflected in, and channelled by, their evolving systems of property? How did the environment of the Peninsula respond to this activity? What adjustments in attitudes did this prompt from European and Maori inhabitants of the Peninsula? Did these adjustments reshape property arrangements, or how property was conceived? And, to return to trace another circle around this spiralling dialectic of questions, what

were the unfolding consequences of these reshaped property arrangements for the environment of the Otago Peninsula?

Consider, as a brief illustration of how some of these questions might be addressed in ways that help us to understand the interwoven dialectics of change in nature and culture, the place of the pig on the Otago Peninsula. First, it is useful to know that the Polynesian settlers here had not succeeded in transporting pigs with them when New Zealand was settled. The pig was a crucial part of the economy in Polynesia; its lack here left a large cultural and economic gap. Maori probably saw animals like seals as at least dietary equivalents. When pigs eventually arrived in southern New Zealand, with some of the earliest European visitors, the pig was eagerly adopted by southern Maori, but initially largely as an item of trade, rather than as a crucial part of the diet. This probably reflected the overwhelming importance to Maori political leaders of gaining new forms of property in the form of trade goods; pigs were at first simply too important to eat. That importance, however, was due to their role in changing what was needed for success in traditional contests for power and prestige between Maori, as pigs were traded for new forms of transport, and new weapons. Pigs thrived on the Peninsula, but finding that they threatened other key resources such as potatoes and cockles, Maori held only those pigs they required for trade and, increasingly, their own immediate consumption at their home on the Peninsula. They let the rest run 'wild' at the head of the harbour, soon to become the site of Dunedin. When whalers began to settle on the Peninsula, they soon discovered that these pigs were still very much seen as Maori property. The whalers adapted to this situation, and prevented their own pigs trespassing on Maori cultivations, by breeding them on islands in the harbour, and distinguished them from Maori pigs by branding them. The early European settlers of Dunedin also saw Maori pigs as wild, and so fair game, and they too found themselves confronted by Maori angry at the destruction of what they still regarded, despite the sale of the land, as their property. But the sale of land destroyed these property arrangements, and transformed Maori society. By 1863, a government official investigating the condition of southern Maori reported that Maori were suffering the consequences of having their formerly large pig runs denied to them.10 Increasingly hemmed in on small 'reserves' where running pigs at large was no longer

possible, they were forced to spend large proportions of their capital on fencing their remaining land against the depredations of the settlers’ stock animals.

The European settlers in turn had to adjust how their property systems treated pigs to adapt to changing circumstances. In the very first years of European settlement in Dunedin, the colonists’ pigs also ran wild because their owners did not sty them, and marauding swine apparently dissuaded colonists from attempting to grow crops and gardens. English property law required that crop-growers fence out stock, if they were to claim damages, but newly arrived colonists struggling to establish themselves found such fencing prohibitively expensive. So, at a public meeting, it was agreed owners would henceforth commit to sty their pigs. This provides just one example of how, as the Otago News editor had it: ‘the farmer finds his past knowledge almost useless, and all his old-fashioned ideas turned topsy-turvy by a new system of things’.11

For years after, a wild population of pigs nevertheless remained on the Peninsula, with undocumented but presumably substantial ecological effects, until being gradually hunted out sometime in the nineteenth century. Many European farmers by then kept small herds of pigs as an adjunct to dairy farming, since they could be fattened on skim milk, but precisely because they were potentially so damaging to the crops farmers raised on their property, they were now permanently styed, and their ecological effects tightly constrained. But the descendents of the pigs first brought to the Peninsula by Maori and whalers even today continue to exert profound influence on the ecology of many other parts of Otago and elsewhere in the south, especially on public land where no property owners have vested interests in controlling them.

The moral of this somewhat schematic story of the shifting place of the pig is that even the widespread and profound ecological effects of that weediest of animals were tied to specific human acts and institutions. Pigs meant something different to Maori and Europeans. For, just as William Cronon found for Indians and the colonists of New England, among both Maori and European on the Otago Peninsula, ‘[t]he pig was not merely a pig but a creature bound among other things to the fence, the

11 Editorial, Otago News, No. 27, 8 September 1849, 2.
dandelion, and a very special definition of property. 12

This thesis is divided into three parts, each of which maps the development of a different set of relationships between people and the Otago Peninsula, as expressed in (and partly predicated upon) different systems of property. Part one discusses the emergence after Polynesian settlement of a Maori community whose members had complex and diverse rights to and relationships with the Otago Peninsula environment based on ancestral association or long-standing occupation. Part two commences with the arrival of Europeans, the takata pora, ‘people of the ships,’ which initiated a different dialogue between Maori, the newcomers, and the Peninsula environment, based around mutual desire to develop and exchange commodities. This linked the Otago Peninsula to the wider world, stimulating ecological changes that its inhabitants could not predict, and struggled to control. Part three discusses environmental, social and ideological change that arose in the wake of the land sale of the Otago block to the New Zealand Company in 1844. This sale allowed concentrated European settlement, and initiated entirely new property relations based on individual and exclusive ownership of land. These relations effected profound changes between European and Maori, and between people and their respective portions of the Peninsula. I trace a range of these developments until the close of the nineteenth century.

Both Maori and European sequences of exploitation of the resources of the Otago Peninsula began from much the same unrestrained and expansionist premise. As John Weaver has emphasised, property rights are difficult to establish and enforce on the frontiers of exploitation and settlement, which are characterised by intense competition for resources and an absence of established political authority. 13

The Peninsula was actually a frontier several times over. First, it was part of the general frontier of settlement as Polynesians spread out after the colonisation of New Zealand. It was a frontier once more as a key focus of confrontation between incursive Maori groups and established Maori settlers. It was then, successively, the

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high water mark of European sealing in mainland New Zealand, part of the frontier zone between European trading and whaling ships and Maori, and a crucial point of contact and culture change during the shore-whaling era. Finally, it contained the critical boundary between Maori and European settlement in the wider Otago region.

During all of these transformations, competition for resources was typically intense. Initial rounds of acquisition and allocation were often thought to be once-in-a-lifetime opportunities, but all too often the capacity of those asserting claims to maintain their rights was limited. Finders could only exert a tenuous claim to be keepers. This commonality helps explain why and how, in these cases, small numbers of people single-mindedly over-exploited resources in similar ways, with considerable environmental impact. Indeed, as Atholl Anderson has suggested, this phenomenon may be an inherent dynamic of colonisation.  

Other political and social factors, however, differentiated how effectively Maori and European respective property claims could be codified and enforced. The divergent histories of Maori and European sealing provide an illustrative example, one which this thesis explores in some detail. Maori and Europeans both focused on hunting seals, mainly the New Zealand fur seal (*Arctocephalus forsteri*), in the early stages of their colonisation in New Zealand. Both Maori and Europeans decimated seal populations. However, the wider political and social context within which they did so was very different, and so any initial simple equivalence cannot be long sustained.

European seal hunting was driven by effectively inexhaustible demand from imperial metropoles, which pushed resource hunters to engage with an ever-widening frontier of exploitation. In this situation, the only way in which transient sealers could exert any exclusive claim to the sealing grounds they visited was to keep its location secret. As Weaver notes, ‘frontiers teemed with defiance, secrecy and deception. These attitudes were directed not just at governments but at other individuals as well.’

Sealing captains routinely refused to disclose where they had obtained their skins to either authorities or rivals, and often resorted to trickery to discover or access sealing

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Maori exploitation of seals, while clearly highly over-exploitative in its initial stages, had at least the potential to assume a more sustainable character. The historical evidence needed to decide whether it actually did so or not is very weak but, at the very least, this thesis argues, we need to consider why breeding seal populations survived on the Otago Peninsula through several centuries of continuous Maori exploitation, given that breeding seals were largely eliminated elsewhere in New Zealand.

There are several reasons for positing that Maori may have begun to exploit seals in a more controlled way, though it must be immediately stressed once more that this is not to suggest that we have firm evidence about the sustainability (or otherwise) of Maori exploitation of seals towards the end of the pre-European period. The continued presence of seals on the Peninsula may have been wholly predicated on a combination of the richness of the habitat, and the small number of Maori, rather than any change in the patterns of Maori predation. But it is worth considering the several grounds for positing that Maori may have begun to learn from their mistakes, and adopted different patterns of behaviour that helped sustain seals. First, demand was driven by, and limited to, the subsistence needs of a small population. Second, while Maori had a long history of overexploitation of resources, followed by migration, once they had arrived in the south of New Zealand Maori were well aware that they had nowhere else to go. Third, initial over-exploitation of seals was forced by the absence of alternative foods; seals were simply the most obvious and easily available source of fatty, energy rich, food. Over time, Maori learnt about other food sources, and so at least had a choice over which to exploit. Fourth, as seals became scarcer, they presumably also became more highly valued, and rules regarding their use therefore more likely to evolve.

Fifth, and for the purposes of this thesis most importantly, a key dynamic of Maori society was the drive to gain mana (prestige) and pass it on to one's descendents. This dynamic required mechanisms that assured rights to resources, and agreed mechanisms for transmitting those rights to descendents. There were universally agreed ways in which resources could be claimed in Maori culture. By far the most
important of these were long-term occupation and ancestral association. Conquests, for example, were almost always carefully buttressed by strategic marriages, so that descendents could demonstrate an ancestral property right. Further, the political and religious leaders in Maori society had undisputed power to close off access to resources, and were known to do so for ecological reasons, for example when it was the wrong time to take a resource.

In this situation, Maori had a clear cultural, political, and economic vested interest in their communities retaining ongoing and long-term access to resources. Collectively, these reasons indicate a range of the pre-conditions for the effective assertion of property rights, and the role of those rights in maintaining resources. It is therefore telling that, far from keeping their resources secret, Maori took care to demarcate and publicise their property rights.

This thesis argues that Maori living on the Peninsula gradually developed a nuanced and environmentally sensitive system of property rights that reflected their social and political organisation. Rights to use resources and occupy places derived from ancestral associations. They were generally held by the heads of whanau (families) under the authority of rangatira (leaders; literally, 'those who hold the group together'). Rangatira led hapu, and were the most significant members of communities, as organisers and representatives. Such rank conferred preferential access to food and reproductive rights, but there was comparatively little personal property; small and mobile communities could not generate, transport, or defend large surpluses.

Under their rangatira, communities exercised sovereign political control over a geographic territory. But the property rights held by members of the community within their territory were essentially functional, and not geographic. That is, space was not owned, rather rights were asserted to use a particular resource in a particular

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16 Eddie Durie, “Custom Law” (Waitangi Tribunal Library, unpublished paper, 1994): 30. Rangatira were generally called chiefs by European settlers.
way. Thus a particular tree might be subject to several different titles owned by different people – for example one title for fowling, and another for the fern root grounds growing about it. In the same way, a space might be the rat run of one family, at one time of the year, and the weka preserve of another family at a different time of the year.

Because different families moved about the tribal territory in different patterns so as to best exploit the range of titles that they held, the Peninsula communities were fluid, their changing congregations shaped by seasonal patterns of fission and fusion. Together the village, the seasonal cycle, and a particular bundle of property rights, defined for each Maori person their economic relationship with their environment. Families gathered in villages to survive winter, a time for mending nets, and working stone, bone and wood. They scattered to harvest flushes of abundance as the weather warmed. The activities of different combinations of small groups were calibrated against the expected distribution of temporary flushes of seasonal abundance; reflecting this, people had rights of tenure and access to exploit a wide range of resources diffused over a large territory.

Maori changed their economy, and their ecological roles, to take advantage of the arrival of Europeans. Maori and Europeans mingled to satisfy a mutual desire to swap. Trade was the medium of contact, cooperation, occasional conflict, and gradual comprehension. European ships were vectors incorporating Maori production and the ecosystems of the Peninsula within the webs of a commercial market economy transporting ideas, objects and organisms around the globe. A range of resources became not simply a means of subsistence, but also part of the medium of trade. Trade thereby made things mean something new, and different. Things that had exchange value were an altogether different kind of property; through exchange they could be transformed into a bewilderingly large array of other goods, and the demand for them was of another order. Maori leaders began to organise their communities to produce surpluses of the products in most demand: potatoes and, in particular, flax. They did so to gain access to European goods, which had immediately become crucial to successfully competing in Maoridom. Producing these surpluses began to alter

seasonal patterns of community settlement and dispersal. Furthermore, the arrival of suites of new things, and in particular new organisms, such as potatoes, pigs, and pestilence, marked the advent of a new dialectic between the local and the global. The resulting ecological changes were rarely predicted, and even when understood, very difficult to control.

The drive to acquire new forms of property, and in particular to gain muskets with which to compete for power, resources and territory with other Maori, made shore whaling possible, and stimulated the first shared settlement of the Otago Peninsula around the Weller brothers’ whaling stations from 1831. Intensive interaction between shore whalers and Maori required the tentative yet progressive creation of a ‘middle ground’, a cultural space in which bargains could be struck, relationships could be negotiated, and new communities could take nascent shape.21

Within the middle ground mutual understandings gradually emerged as to how each culture viewed property and resources. From the European whalers’ perspective, the station was primarily a depot from which resources extracted from the wider environment were transported to imperial markets as commercial commodities for sale. It was the primary node of an extractive commercial economy. The profits from whaling ventures focused on the Peninsula funded the Wellers’ commercial expansion, which was primarily directed at timber ventures elsewhere in New Zealand, and pastoral ventures in Australia. From the Maori perspective, the station provided paid labour and point of sale for a range of commodities, which they exchanged for access to European trade goods.

The functioning of the station was predicated on substantial inputs of Maori labour. Maori men crewed whaling boats, supplied timber, and built much of the station’s infrastructure. Maori men and women tended potato crops, and women maintained the European whalers in some domestic comfort. Maori exchanged this labour, and commodities such as potatoes, timber, fish, whale bone, ‘mutton birds’, and curios, for weapons, whale boats, tools, clothes, and tobacco.

The production of commodities for commercial exchange generated new ecological relationships between people and the Otago Peninsula environment. Maori soon preferred potatoes to fern root, travelled on whale boats rather than walked, and clustered at places, such as the Peninsula, where contact with European was most frequent.

In addition, new political and social relationships evolved to reflect the mutual interest of Maori and European whalers in transforming resources into property. The presence of the whaling station itself was predicated on the political patronage of Otakou Maori; Otakou Maori, for their part, sought patronage from the political hierarchy in Sydney. The intermeshed interests of Maori leaders and the Weller's commercial enterprises were reflected in political 'marriages' between Maori women of rank, and leading whalers such as Edward Weller and Octavius Harwood. After whaling declined, some Europeans remained, and negotiated leases of the land they used from the Maori. This form of property right was something each culture could accommodate fairly comfortably, since Maori were accustomed to allowing others limited use rights within their territory which were maintained by ongoing personal interaction. These leases were arranged between the Europeans and Maori leaders. Three leaders, Taiaroa, Karetai and Korako signed most of the leases for which records remain in various combinations, suggesting the complex power sharing arrangements that Maori communities were making on the Peninsula. The prices, for instance £10 for the right to run stock on Maori land for eight years, suggest a bargain in which neither party was particularly dominant.²²

These facets of a middle ground developed on the Otago Peninsula from 1831 until at least 1848. However, the increased interaction that stimulated the middle ground also greatly added to pressure on the British to formally incorporate New Zealand into their empire, and declare their sovereignty. This pressure came from several points, and events on the Otago Peninsula contributed to three of the most significant.²³

²² Bill Dacker, He Raraka a Ka Awa, p128-29.
²³ The motivations for the British acquisition of sovereignty have been much debated. For a concise and penetrating discussion that focuses on the reasons stressed here, see Belich, Making Peoples: A History of the New Zealanders from Polynesian Settlement to the End of the Nineteenth Century, (Penguin Books: Auckland, 1996), pp180-87.
First, from the mid-1830s the Europeans operating commercial enterprises in New Zealand made increasingly loud and persistent requests for imperial protection over their property. The Wellers, for example, were among the Sydney merchants who petitioned the Governor of New South Wales in 1834 regarding "the want of protection afforded to those engaged in the trade to New Zealand, and the great and increasing evils resulting therefrom."  

Second, missionaries fuelled growing humanitarian fears about the perceived debauched influence of whalers on Maori. In 1835, the missionaries James Backhouse and Samuel Marsden, for example, each wrote to the anti-slavery advocate Thomas Buxton, complaining of the Wellers' taking hostage an Otakou chief and his family. Marsden sought to assist Buxton in seeking legal protection for 'heathen nations in the islands and countries connected by commerce, or other relations, with the British Empire.'  

The third significant factor was an extension of putative property rights to Maori land by speculative entrepreneurs that accelerated through the late 1930s. The Wellers were a significant part of the land speculation. In fact, by 1939, the Wellers claimed to have 'purchased' over three and a half million acres, including over two million acres in the South Island (including the Otago Peninsula), Stewart Island, as well as substantial parts of what is now Auckland, the North Shore, and lands about Whangarei harbour.  

Their speculation was, of course, predicated on the belief that New Zealand, or at least parts of it, was to be brought within the British Empire. But it also helped make this belief a reality much sooner than it might have otherwise become. As John  

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24 John Guard, R.W. Sanderson, W.S. Anglim and Joseph Weller to 'His Excellency The Governor &c &c &c' Major General Richard Bourke, Hocken Collections, MS 0440/5, pp5-6. Cited in Church, ed. Gaining a Foothold, pp194-95.  
25 Letter from Samuel Marsden to T.F. Buxton, M.P. in Report from the Select Committee on Aborigines (British Settlements;) together with the minutes of evidence, appendix and index. Ordered by the House of Commons, to be printed, 5 August 1836, cited in Church, ed. Gaining a Foothold, pp200-202.  
26 For details of the Wellers' speculation in land see Ian Church, ed. Gaining A Foothold: Historical Records of Otago's Eastern Coast, 1770-1839 (Friends of the Hocken Collections: Dunedin, 2008), pp386-89, 393-95, 399-401, 417-18.
Weaver has noted, ‘[p]roperty rights were at the heart of potential trouble in Aotearoa’; by ‘selling’ so much land, and generating a frenzy of land speculation, ‘Maori vendors obliterated any possibility of living in peace without a European-style government.’

The Wellers’ land purchases were dubious in the extreme, and subsequently none were accepted by the European authorities as legitimate, nor did Maori recognise them as a transfer of ownership. However, they did presage the arrival of a concept new to the Peninsula, of land itself as tradable property, which was to powerfully shape the subsequent environmental history of the Otago Peninsula, and the relationship of Maori to that environment. This history, as elsewhere in New Zealand, was not without conflict, for as Tom Brooking has remarked, ‘one of the great misfortunes of New Zealand is that it has been settled by two peoples who are romantic and even sentimental about land and imbue it with magical properties that move past logic into the realms of the supernatural and transcendental.’ The political and social distribution of, and control over, land was henceforth predicated on the ways land was organised as property.

The settlement of Otago was predicated on the sale in 1844 of the 533,000 acres of the Otago Block to the New Zealand Company. It is important to realise that, despite their eagerness for this sale, Maori were extremely reluctant to part with any of the Otago Peninsula. The New Zealand Company, on the other hand, were determined to acquire it. After protracted negotiation, Maori eventually withheld from sale 6665 acres on the northern portion of the Otago Peninsula. From this point, two very different systems of land ownership, land use, and ultimately ecological relationships, emerged there.

Europeans divided their portion of the Peninsula acquired from the sale into nominally equivalent units of production. The New Zealand Company’s original plan entitled each purchaser of title to select one example of each of three sorts of sections: small quarter acre residencies in a town centre, fringed by ten acre suburban sections,

with fifty acre farms on the margins. Land on the Peninsula was allocated as either suburban sections adjacent to navigable waterways, or rural sections on less accessible land.

These property divisions reflected the ideological presuppositions of the prospective Scottish settlers. In the minds of its founders, theirs was to be a tight-knit community of independent, Scottish Free Church, yeomen small-farming families, who lived and worked on what, if they were diligent and thrifty enough, would be their own land. The settlement was to be civilised from the outset, and its key tenets to achieving that goal were religious uniformity and intensive land use.

The Scottish settlers were steeped in the doctrine of improvement. This held that only those people who improved land by intensive use deserved to have property rights over it. Farming constituted the most intensive use, and so conferred the most valid right to title. Valorising farming validated the uses the Scottish settlers intended for the Peninsula environment, justifying the destruction of forest and wetland, and excused the sweeping away of Maori traditional society, which had failed to make sufficient use of what was (tellingly) called ‘waste land’.  

To ensure clarity over property rights and allow secure expenditure of capital, colonising Europeans divided space into rectangles and, where possible, arranged these rectangles into grids. The grid is ‘such an ancient feature in Europe’s landscapes, and so generic and ubiquitous in its far-flung colonies’ that it is liable to be seen as historically neutral. Yet this is a highly stylized and idealised solution to spatial organisation. Grids, admittedly, are practical for some purposes. They are cheap and speedy ways to chop up space into clearly defined, and therefore easily allocated, and exchanged property. They facilitate the commodification of land by satisfying the need for a sense of equivalency and certainty by creating superficially equivalent units.

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29 Tom Brooking, Use it or Lose it.
Such was the importance of establishing clearly defined property boundaries that the
primary task of Charles Kettle and his assistants, who were sent to Otago to prepare
for the settlers’ arrival was to map out the initial property divisions. Once this was
accomplished, properties in Otago could be sold to people on the other side of the
globe. Yet, property parcels mapped on a paper plane that purport to represent
identical productive units of land deflect attention from the unruly nature of the land
itself. Size and convenience are important but hardly the sole criteria for such
economic evaluations, and actual ecological variation in topography, climate, aspect,
soils, flora and fauna expose the map’s illusion of equivalency.  

The properties mapped by Charles Kettle in 1846-47 were all nominally equivalent,
being equal in size, and aligned to access from the water. The remainder of the
Peninsula was surveyed in the early 1860s, and again land was allocated in nominally
equivalent units. Again, in so far as possible, these were given equal access to what
was in fact still a hypothetical transport network of roads. But despite the surveyors’
best efforts to align straight roads with the Peninsula’s pitching and rolling landscape,
many of these roads have never in fact been constructed.  

Nevertheless, the labour of successive generations of Peninsula landowners has been
strictly defined by the boundaries of these land parcels. This is nowhere more evident
than in the imposing dry stonewalls that line many of the original property
boundaries.  

32 For comparative discussion of the use of grid planning in British colonial contexts see Ibid. Also
of their use in shaping the colonisation of New Zealand, see Giselle Byrnes, Boundary Markers: Land
Surveying and the Colonisation of New Zealand (Wellington: Bridget Williams Books, 2001); Park,
"Edward Gibbon Wakefield's Dream, Thomas Shepherd's Eye and New Zealand's Spatial
Constitution."

33 For discussion of these roads see David Allen, "Peper Roads and Walkways on the Otago

34 Catherine Higham, “Agricultural dry stone walls in the Dunedin area.” University of Otago,
Many species could, of course, cross fences; these farmers did tend to watch, and guarded as best they could against encroachment on their fields. Moreover, the Peninsula’s difficult topography and variable soils often defeated farmers’ efforts to control their farm’s ecology. On some properties, such factors meant that it was difficult to exert much control at all. According to the son of Captain William Leslie, who developed a dairy farm on 42 acres of steep and shaded land on the south side of Harbour Cone, for example, ‘there was never a wheeled vehicle on my father’s land other than a wheel barrow and in later years a bicycle.’ This, as the son realised, ‘could scarcely be called dairying land.’ Though small farmers such as the Leslie’s could not always mould the ecology of their properties as they might have wished, the pattern of their efforts to do so was nevertheless shaped by the land parcels laid out over the Peninsula, which have therefore profoundly shaped its environmental history.

Maori property ownership within their portion of the Peninsula has a separate and quite different history. The sale of the Otago Block in 1844 and of ‘Kemp’s Purchase’ in 1848 left the 6665 acres retained at Otakou and Papanui on the Peninsula as by far the largest and most important area of Maori land in Otago. This land was not a reserve but an area retained under customary title. Confinement within this land, exacerbated by the need to accommodate Maori whose ancestral connections lay elsewhere, strained relationships.

Maori throughout New Zealand were under consistent pressure from Europeans to individualise their landholdings, since their ‘communism’, it was held, was the reason so much of their land lay ‘waste’. The European settlers’ attitude that there was a moral, God-given imperative to improve land extended to its aboriginal inhabitants who, it was widely argued, needed to adopt individual property rights if they were to rise in the scale of civilisation. As Weaver has put it, ‘[I]mprovement and property rights have had a reciprocal relationship since the Enlightenment. People who improved land deserved property rights; property rights improved societies.’

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35 Cited in Angela Middleton, ‘Harbour Cone: A Relic Landscape on the Otago Peninsula’ *Archaeology in New Zealand* p38
36 Evelyn Stokes, *The Individualisation of Maori Interests in Land* (Hamilton: Te Maatahauraki Institute Monograph, 2002), p2
Yet, as explained above, Maori did not hold property rights to their lands in common; only political authority, or sovereignty over land, was held in common, but that is true of most if not all, human societies. However, accustomed to the idea that property rights were defined by geographic space, Europeans struggled to recognise that individual property rights could be, and were, differentiated on a functional basis.\textsuperscript{38}

Maori still held their land at Otago as customary land. Their title did not stem from the Crown. The Crown’s system of native reserve management therefore could not be applied. This greatly frustrated the authorities in Otago. Their report of 1858 precisely conveys the pervasive power of the settlers’ belief that Maori land simply had to be divided into individual titles:

We are of the opinion that the effect of such a measure would be the encouraging and stirring up the Natives to rival both one another and the Europeans in providing comfortable houses to dwell in, and in enclosing and properly cultivating their land. While their lands and pas are held in common they have no individual interest in improvements. It would tend to settle them more down on the soil, and by separating them from that common influence which they have over one another would greatly tend to make them emulate the European settlers; and moreover, as it would settle them in one locality something more substantial could be attempted for their moral and religious education than could be done under the present migratory mode of living; besides it seems to us to be a principle somewhat inherent in human nature that the possession of an exclusive Title to land has a tendency to increase the desire for improving the worldly circumstances and to encourage self-respect, and obedience and respect to the ordinances of Law and good Government, and as a means to these ends it has a tendency to increase the desire for mental improvement...\textsuperscript{39}

The central motifs of the settler’s ideology surrounding the significance of property for justifying their superiority over Maori are here made manifest: civilisation is predicated upon being settled ‘on the soil’; individual property rights stimulate social and economic competition, increasing productivity. If the Natives would but adopt them, they might at last begin to improve their minds.

The mechanism through which this was to occur was the Native Land Court, established by the Native Land Act 1862. This Act was predicated on the belief,

\textsuperscript{38} Banner, \textit{Two Properties, One Land}, p814
\textsuperscript{39} ‘Report by the Commissioners of Native Reserves for the Province of Otago’, \textit{Appendices to the Journal of the House of Representatives}, 21 June 1858 e-4,p13.
announced in its preamble, that ‘the peaceful settlement of the Colony and the
avancement and civilization of the Natives [would be advanced] if their rights to
land were ascertained defined and declared.’

In 1859, Taiaroa and Karetai, the two leading leaders of Otakou, made the first
adjustment to the tenure. They divided the land between them into two distinct
territories. At the first sitting of the Native Land Court in Otago, their descendents
divided each of these two territories into numerous freehold titles that, just like
European land, were derived from Crown grant. These titles were issued to named
individuals (though these people were often representative of their family). Becoming
individual owners of property placed Maori on the same political footing as
Europeans, and allowed them to participate in the political process. Creating these
titles also required that a European survey define their boundaries. But the properties
created show this was not simply an adoption of foreign forms to allow inclusion in
colonial politics.

Otakou Maori did not undertake this transition to individual property in land lightly.
They were driven to do so by a range of problems including difficulties allocating
property rights on their residual land, and because of external pressure to abandon
their perceived ‘communism’. The Peninsula was the largest remaining area of Maori
land remaining in Otago, and people alienated from their primary ancestral rights had
to be accommodated by the Peninsula communities. Half-caste children, often
abandoned by their European fathers, also posed problems. External pressure to
individualise title was intense and unrelenting, and the settlers steadily foreclosed any
other option.

By 1868 Otago Maori struggled to exert any control over their property. Until 1862,
they could only sell land to the Crown, and they could not lease land at all (since the
Crown was uninterested in leasing). After 1862, they could only sell if they
individualised title. They would have much preferred to lease land rather than sell.
But the Scots settlers had quickly moved to interfere with the leasing arrangements
they had made with the remnant ex-whalers.

40 Native Lands Act 1862, preamble; cited in Stokes, The Individualisation of Maori Interests in Land,
p11.
The Scots always feared the possibility, which Wakefield had tried to extinguish when the Otago block was purchased, that the Maori reserve might become the focus of a rival centre. It did, after all, command the entrance to the Harbour, and had been the initial trading port. They were also obsessed, Cargill in particular, with maintaining the ‘concentration’ of the settlement. This required maintaining which lands could be settled, and at what price. Their likely attitude to property arrangements reached between Maori and the Europeans already living at Otakou was revealed in Cargill’s speech to the colonists shortly after their arrival designed to encourage them that an agricultural settlement was possible. Cargill subtly reminded the settlers that they were to displace the previous inhabitants, who had been awaiting their arrival:

In the cultivations of the few squatters (mostly from Ross and Sutherland) who have been waiting to join you, you have seen and partaken of the wheat, barley, oats and garden-stuffs you have been in the habit of raising, together with the sheep and cattle despastured on the hills you are to graze.'41

In 1851 the provincial authorities told Maori that the arrangements that they had reached with the Europeans at Otakou were ‘unlawful’. They were compelled to sign an agreement ‘not to disturb them or their goods and effects’, but could not make further arrangements until ‘there shall be a law passed that may legalise their remaining and putting our reserve to the purpose it must certainly have been intended.’42

Multiple ‘ownership’ presented two great problems when Maori confronted settler political and economic systems. It generally precluded Maori raising capital against their land, and completely barred them from participating in the political process. The settlers infamously ridiculed Maori for attempting to participate in provincial elections in the 1850s. Unsurprisingly, Otakou Maori felt their exclusion keenly. As one of their leaders, Topi Patuki bitterly complained in 1860, ‘if you do not allow us

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41 Otago News, No. 3, November 1848, p38
42 MS 0438/109, G. C. Thomson Papers, "Agreement by Maori Chiefs Not to Disturb European Settlers at Otakou." Dunedin: Hocken Collections.
full privileges we shall be like rats which steal the food out of the houses. You all say
that there is one law for all of us...' 43

The immediate stimulus for the sitting of the Native Land Court was Governor
George Grey’s promise in 1867 that the adequacy of reserves in Otago would be
investigated. Individualisation of title was tied to this process. 44 The continued unease
of Otakou Maori at having to transform their property arrangements, is revealed,
however, in letters H.K Taiaroa wrote to former Commissioner of Crown Lands
Walter Mantell, asking him to attend the Court’s proceedings and ensure that they did
not lose land. 45 Further indications of how far Maori were willing to adjust is given
by H.K Taiaroa’s answer to Chief Judge Fenton when asked if he wished to make the
Otakou land inalienable: ‘...he wished to have the right to sell the land if he chose,
but if the assembly of the Natives did not wish anybody to sell land, it should not be
sold. If all was sold, they would have no place to stop at. Leasing was good.’ 46 In
other words, it was still clear that the leaders could not overrule the collective
authority of the people, and it was clear Maori did not wish to sell land, though
naturally they did want the power to choose to do so when necessary.

Otakou Maori insisted on designing the layout of titles themselves. 47 The properties
they designed in 1868 were typically long narrow strips. These resemble the land
divisions of Eastern Polynesia, classically a strip of land running from ridge to coast,
and on out into ocean. People of rank had larger areas, with access to choicer resource
areas. But as many titles as possible allocated access to land-based, littoral, near-shore
and deepwater environments. They defined ecotonal boundaries that tried to ensure
each of their owners had access to a similar range of resources. This was therefore,
an attempt to adapt traditional property systems based around functional use of a range
of resources, to European property systems based around the division of geographic
space.

43 Otago Chronicle October 19, 1860.
44 Angela Wanahalla, Transgressing Boundaries: A History of the Mixed Descent Families of
Maitapapa, Taieri, 1830-1940º (PhD, University of Otago, 2004), 113.
45 For discussion of these letters see Ann Parsonson, “Comments on Otakou Letters”, Hocken
Collections, AG-653/563
46 Cited in Alexander Mackay. A Compendium of the Official Documents Relative to Native Affairs in
47 Angela Wanahalla, Transgressing Boundaries: A History of the Mixed Descent Families of
Maitapapa, Taieri, 1830-1940º (PhD, University of Otago, 2004), 120.
A further sign that Otakou Maori attempted to find ways to retain traditional forms of authority despite the transition to new forms of property is that title to some particularly key pieces of land, namely Okia Flat, Akapatiki Flat, and land backing off Te Rauone Beach, were vested in combinations of the leaders H. K. Taiaroa, Hoani Wete Korako, and Tare Wetere Te Kahu. Some of these lands, such as parts of Okia Flat, and Akapatiki Flat, were sources of key resources, such as cockles, fowling grounds, and flax (they also held some particularly tapu places.) As elsewhere in New Zealand, this seems a case of Otakou Maori leaders adapting to the requirements of adopting individual title, while maintaining traditional forms of authority, by acting as trustees for the shared interests of their communities.48

Thus Maori and Europeans instituted two very different ways of allocating land as property. The Maori titles surveyed in 1868 attempted to sustain a household’s needs from within an area intended to capture as much ecological diversity as possible. European titles mapped in 1847 were split into uniform portions where the settlers intended to transform and control ecological diversity. It is critical to realise that even today all land holdings are divisions or amalgamations of the original sections mapped out by the 1860s. Each community has rearranged these titles, into different patterns, like pieces of a jigsaw, in a process that mirrors the evolution of new ecological, economic, and ideological relationships with the Otago Peninsula.

This thesis concludes that the colonial economy, as expressed in way it organised tenure to property and resources, contained from the start two ecological contradictions that shaped subsequent history. First, the consequence of the sale of the Otago block was that Maori were confined to a fragment of their former territory. Their traditional property arrangements were transformed by the operation of European political power. Their exclusive property rights to the crucial resources of the foreshore, and to fisheries, asserted by Taiaroa in the 1870s, were not recognised at European law. This simultaneously made their previous economy and ecological relationships impossible, and presented them with an unpalatable future. The Maori community on the Peninsula attempted to meld their property arrangements to

48 Richard Boast, Buying the Land, Selling the Land: Governments and Maori Land in the North Island 1865-1921, (Wellington: Victoria University Press, 2008), p70
changing circumstances by instituting formal systems of individual land ownership. But individual ownership undercut the authority over the community once wielded by their leaders. Thus, for example, Taiaroa was to complain to the House of Representatives that he was unable to convince the landowners at Otakou to cooperate in fighting the problems caused by encroaching sand. Worse, most of the Otakou lands were simply too small to support economic farming enterprises. Though only twelve of the original sections had been sold by 1900, the fact that Maori actually occupied only a very small fraction of their land by then, instead leasing it to Europeans, indicates the scale of the problems they faced.\footnote{Bill Dacker, "The Effects of Loss of Land at Otakou" Hocken Collections, AG-653/160, p83}

Second, the place created for the European landholdings on the Peninsula within the colonial economy was ecologically self-destructive, and economically unsustainable. By 1900 the pattern of small-farming instituted with such immense labour was slowly disintegrating. The number of farmers was dwindling, and the size of farms increasing. Its institution had required extensive clearance and intensive land use that had rapidly exterminated much of the diversity of life on the Otago Peninsula, caused significant soil erosion, destroyed wetlands, and exacerbated problems with the spread of sand. By 1900 most of the indigenous fauna, including the majority of mammal, bird, reptile, and invertebrate populations, had vanished. Very many more species populations were and are probably the living dead; hanging on the thread of human good will is not a long-term survival strategy. By 1900 only a very few of the still largely Scots settlers on and around the Peninsula had serious doubts about the wisdom of their enterprise. But they did exist, and they did speak out; in their testimony lies the seeds of the much stronger conservation movements of the century to come.

The Otago Peninsula’s present day residents would find little that is familiar in the environment the first Europeans settled. The dense, lush forest, alive with birds, remains only in tattered shreds tucked away in gullies or clinging to inaccessible slopes. Nor would the people of today willingly inhabit or even recognise the moral or conceptual universe of the people who drew up the original titles. Yet the property arrangements that divided the Peninsula and patterned the ways its environments were
transformed still powerfully shape daily life there, influencing the channels of commerce, the parcels of production, the places of recreation and the forms of today’s landscapes. They live in the wake of the dream that the Peninsula would one day be, as Thomas Burns envisioned, a land ‘waving with the yellow corn and the pursuits of rural husbandry; the pretty farms, “the busy mile,” and the happy smiling cottages by the wayside or nestling amid the trees in some bosky dingle or sylvan dell’. Burns and his successors succeeded in realising this dream on the Otago Peninsula in the nineteenth century, though the changing economics of farming have rendered it increasingly redundant in the twentieth. Residents still live with the unfolding consequences in the twenty-first century. Tom Brooking has warned that the pioneer endeavour to improve the land is not simply a celebratory tale, for:

\[\text{The peninsula and hills guarding Dunedin tell a different story. Development of these areas represented poor judgement on both environmental and economic grounds. These green hills did not sustain farming or close settlement and have eroded away. Most of this greasy back country would have been better left in bush. On balance, the desire to subdue, domesticate and transform even marginal and poor country constitutes the most negative contribution of the Scots settlement of Otago.}\]

This is a fair assessment from the perspective of the present, but while I have little sympathy, ultimately, for those who decry environmental history for its apocalyptic tone, nor should we hold the past to the standards of the present. Dunedin might not have survived without the food and timber supplied by the Peninsula through the first decades of settlement. Forest may now be worth more to many residents of the Peninsula than grass, but that is a position ultimately privileged only by the labour of the past. The settlers on the Peninsula were right to make their farms there: they knew no other way to live. They were wrong, on their own terms, to take so much forest, as some settlers realized even then: clearing steep slopes seldom made much return on the investment of labour, and environmental consequences such as erosion were often immediate, and severe. And many nineteenth century settlers lamented the loss of beauty as the Peninsula’s forests were destroyed. Nevertheless, when people admire the bare clean lines of the Peninsula’s folding hills, they see the landscape and

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50 The Reverend Thomas Burns to Captain John Cargill, 30 January 1847. See Ernest Northcroft Merrington, *A Great Coloniser the Rev. Dr. Thomas Burns* (Dunedin: The Otago Daily Times and Witness Newspapers Co., Ltd, 1929), 266.

environment that Maori and European made in the nineteenth century. It is that world that people largely inhabit today, and it still moulds what people believe the Otago Peninsula to be.

1.2 Historiography

Historians have long been interested in the interactions of people with places. However, ‘environmental history’, so-called, is actually a fairly recent phenomena, emerging in response to rising concern over the state of environments and human impacts thereon in the 1970s. It is often not quite history as hitherto known.52 Donald Worster identifies the clusters of issues of environmental history as the study of nature itself, of human economies, and of human conceptions of and attitudes towards nature.53 Environmental history, so characterised, has the abyssal potential to become the history of everything.

The sheer breadth of trying to simultaneously interrogate nature, production and cognition, means that environmental history is fairly undisciplined: its practitioners borrow exuberantly from all sorts of fields, from astronomy to zoology, by way of biology, ecology, earth sciences, and philosophy. The closest affinities are with historical ecology and (especially) historical geography; as McNeill has noted, where such geographies rely on texts, they are effectively indistinguishable from environmental history.54 This is partly because environmental history itself has little common ground: few theories, methodologies or models are widely shared.55 It has been variously characterised as ‘an unevenly spreading blob’, the ‘product of a resident collective imagination’, with ‘a boundary problem of cetacean proportions’.56

53 Ibid., 293. McNeill suggests ‘three main varieties’ of environmental history have emerged: material; cultural/intellectual; and political. He notes that most practitioners tend to feel more at home in one variety than in others and that it is comparatively rare to try and include all in a single text. See J.R. McNeill, "Observations on the Nature and Culture of Environmental History," History and Theory 42 (2004): 6.
55 Ibid.: 37.
56 Quotations of J. M. Powell, and Harriet Ritvo, respectively, cited in Douglas Weiner, "A Death-Defying Attempt to Articulate a Coherent Definition of Environmental History," Environmental History 10, no. 3 (2005): 1, 11.
It is still not well integrated within the wider discipline of history; indeed, it is unclear how and where it should be incorporated into the academy: is environmental history a sub-discipline of history, a new discipline, or an interdisciplinary activity? Environmental history is, it seems, simply what environmental historians do, defined by its community of practitioners, not its subject matter.

As McNeill has noted, 'mere models of how to do environmental history' have been more influential than theories. Longitudinal local studies such as this, offering a long-range but tightly focused vision of the past, have been described as 'the bedrock of environmental history'. The pioneering work in this respect is Herbert Guthrie Smith's incomparable analysis of local change, Tutira: The Story of a New Zealand Sheep Station which demonstrated in extraordinary detail not only the remarkable pace and scope of ecological change brought about by European settlement, but also just how self-conscious some settlers were about the ecological changes they were wreaking. Historians have been slow to pick up the traces of this sort of study, which was, after all, the product of a lifetime of active work on the land. In New Zealand, historical geographers such as Kenneth Cumberland, Andrew Clark, and Ray Hargreaves initially produced research closest to the concerns of Tutira. They documented in detail the nature and extent of human-caused environmental change, and, though less explicitly, the changes wrought in the process on human protagonists. This tradition of historical geography has been maintained to the present, by Peter Holland in particular.

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62 Herbert Guthrie-Smith, Tutira - The Story of a New Zealand Sheep Station (Seattle and London: University of Washington Press, 1921).
64 Peter Holland, "Plants and Lowland South Canterbury Landscapes," New Zealand Geographer 44, no. 2 (1988); Peter Holland and Ray Hargreaves, "The Trivial Round, the Common Task: Work and
Locally, John Huggett’s 1966 thesis ‘An Historical Geography of the Otago Peninsula’, provides one of the two fine-grained studies of the Otago Peninsula to date (the other being Hardwicke Knight’s 1979 Otago Peninsula: A Local History which, though it contains many invaluable photographs, is a somewhat loose collation of historical detail and incident). Huggett’s documenting of the development of a cultural landscape from the Otago Peninsula environment until 1900 covers a terrain and timeframe similar to the concerns of this work. In particular, Huggett’s thesis details the development of European settlement and farming, and I acknowledge a considerable debt to his work in this respect. However, Huggett brushed over the effects of Maori occupation of the Peninsula, and lacked access to or knowledge of many of the documents that underpin this study’s analysis of the early contact period.

Huggett also had comparatively little to say about some of the environmental effects of human occupation generally. As Paul Star has commented, historical geographers, concerned with ‘landscape’, and environmental historians, concerned with ‘environment,’ address similar terrain but with different emphases. First, landscape is a narrower term – it makes no sense to talk of a marine landscape, and yet the marine environment has a great influence on the Peninsula. The concept of landscape also occludes the sense of a world beyond us, whereas environment, for all its necessary ties to human perception, existed prior to us, and will persist after us.

This thesis draws on a wide range of international and New Zealand scholarship within the discipline of environmental history in order to frame its discussion of environmental and cultural change. Overseas (and in particular American) scholars have led the way in demonstrating how historians might address interactions between humans and the wider world. Alfred Crosby, William Cronon, and other prominent American environmental historians have all found much of interest in New Zealand, characterised as ‘a laboratory for studying the impact of concerted, culturally induced,
environmental change and the resulting production of new landscapes.' The islands of the New Zealand archipelago were the last major land masses to be colonised by human beings; the uniqueness of the indigenous environments and biota, the speed of subsequent change, together with its comparatively extensive documentation, make New Zealand an ideal field of study for environmental history.

Yet New Zealand’s first ‘environmental history,’ so called, was not produced until 1986, and was written by an American. Alfred Crosby’s used New Zealand as exemplar for his thesis in *Ecological Imperialism: The Biological Expansion of Europe 900-1900*, that the demographic takeover of ‘Neo-Europe’s’ depended in particular on people’s biological luggage, a *portmanteau biota* of plants, animals and pathogens. Crosby’s work was tremendously influential on scholarship worldwide. Historians here were a little slow to respond to Crosby’s powerful portrayal of humans as ‘seldom masters of the biological changes they triggered...their role often was less a matter of judgment and choice than of being downstream of a bursting dam.’ In 1998 Paul Star noted with surprise that ‘since Crosby painted the broad brushstrokes in his book, no New Zealand historians have taken a closer look at the paint’. Although considerable detail has been added, there are still large lacuna to be filled. There is, for example, still not one single-author book length treatment of New Zealand’s environmental history. In 2002 Tom Brooking and Eric Pawson published the edited collection *Environmental Histories of New Zealand*, while in 2003 an issue of ‘Environment and History,’ one of the discipline’s two international journals, was devoted to the New Zealand experience. Much of the work over the last decade has focused on charting the importance of evolving European attitudes to the environment. Prominent scholars who have produced work in this vein include Paul

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69 Ibid., 227.
71 Islands, and perhaps archipelagos such as New Zealand, are one of few ecological settings where a ‘national’ environmental history makes any sense. McNeill, "Observations on the Nature and Culture of Environmental History," 35.
Such work has substantially modified Crosby's depiction of New Zealand's transformation. Crosby famously likened the arrival of European ships, to 'giant viruses fastening onto the sides of a gigantic bacterium and injecting into it their DNA, usurping its internal processes for their own purposes'. Powerful as this image is, it tells only half of even Crosby's partial story. Crosby ignored the role of Maori as potent agents of environmental change prior to European arrival, although he did stress the importance of Maori desire for European presence. As Crosby acknowledged, the Maori role was as 'active, even enthusiastic participants in the transformation of their country'; but if so, whose processes were being usurped? The history of early encounters on the Peninsula requires equally full exploration of the ways Maori cultivated Europeans; we might envisage the Maori village as a petri dish for culturing Europeans and their organisms.

Crosby's image should be further altered for, just as viruses mutate as they replicate, people, pigs and potatoes were all changed by immersion in the New Zealand environment. As Paul Star has stressed, to fully understand the Peninsula's...
transformation, as elsewhere in New Zealand, it is also necessary to trace the 'counter-revolution', of European history here: 'the colonisation of European minds within New Zealand, by the indigenous flora and fauna.' Crosby’s diagnosis makes a final and serious error, in tending towards 'a biological determinism comparable to displacement theory.' Displacement theory is the long discredited fallacy that New Zealand’s indigenous biota, including the Maori population, was fated by its isolated ecological history to be victim of an inevitable process of displacement.

However, as scientists in New Zealand had confirmed by the end of the nineteenth century, organisms are not pre-adapted to succeed in new environments, even isolated ones such as New Zealand. New Zealand’s fauna, most obviously its birds, are vulnerable to mammalian predators. But this is not, as Crosby tends to assume, because of a less-intense competitive environment here. New Zealand’s birds are precisely adapted to avoid predation – but only predation by other birds, hence their cryptic colouring, ground-dwelling, and tendency to freeze when threatened. But these adaptations are worse than useless in avoiding nocturnal ground hunters who primarily rely on scent, such as rats, cats, hedgehogs and mustelids. On the other hand, while plant populations have been excised from many areas by intensive human activity, there have been no major extinctions of New Zealand plants. They are quite able to compete with introduced species, except, as Leonard Cockayne long ago realised, 'where draining, cultivating, constant burning of forest, scrub, tussock, and the grazing of multitudes of domestic animals have made absolutely new...conditions which approximate to those of Europe.'

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77 Star, "Settlement and Sentiment in New Zealand, Circa 1900," 2.
79 Holland, "Cultural Landscapes as Biogeographical Experiments: A New Zealand Perspective," 42.
Perhaps the most powerful force shaping how and why New Zealand was able to become so successful a farm was actually the settlers' unshakable faith that this was its destiny. And, as Geoff Park has pointed out, it could so easily have been otherwise: this perception derives from Cook’s promotion of New Zealand, and was very much an historical accident. If Cook had not believed the Hauraki Plains to be much larger and more fertile than they actually are, and promoted New Zealand on that basis as a land where ‘an Industrus people... would very soon be supply’d not only with the necessaries but many of the luxuries of life’ then New Zealand might never have become a Neo-Europe.\(^{81}\) The success of stock and crops required removing the bulk of New Zealand’s rainforests. This was a task in which other organisms played a comparatively insignificant role, unless specifically harnessed towards that end. On the Otago Peninsula, as elsewhere in New Zealand, it was the removal of forest, more than any other activity, that burst the dam and allowed a flood of other uncontrolled and unexpected change; and the settlers knew exactly what they were doing when they laid axe into tree: they were improving their property.

Ideas of improvement played a powerful role in justifying to Europeans the displacement of far flung lands’ aboriginal inhabitants, human or otherwise, and their replacement with European agricultural systems. As elsewhere Europeans argued their colonisation of New Zealand fulfilled God’s desire for an improved, even Edenic world. As Beattie and Stenhouse put it, ‘[t]he idea that the colonists had a God-given duty to improve the land by making it bountiful and productive lay at the ideological heart of ‘ecological imperialism’.\(^{82}\) The ideology of agricultural improvement was sustained by the belief that European reason and science provided the most efficient use of resources. This belief was harnessed to the Lockean doctrine that, while God had given the world to men in common, ‘it cannot be supposed that he meant it should always remain common and uncultivated. He gave it for the use of the Industrious and Rational.’\(^{83}\) Incorporating the world within private property fulfilled God’s plans for

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both humanity and nature; empire was rendered as providence. The extension of empire onto the Otago Peninsula was founded on the belief land ought to belong, not to Maori, who had left it a waste wilderness, but rather to those who could make it most bountiful: those who would own and work it as their exclusive private property.  

As New Zealand's historians have grappled with problems of extracting answers from the archive, Crosby's depiction has inevitably come to seem too limited; too much nuance was subsumed in the powerful flow of a single argument. Crosby acknowledged that 'tools, weapons, gewgaws, and ideas' were also important, but he was most concerned to stress the importance of organisms in the transformation of New Zealand. He had little to say about the significance of ideas – such as different agroeconomic systems, or conceptions of property – in shaping the ecological roles of organisms. The point is nicely illustrated by the role of disease, which though it would have decimated the Maori communities on the Peninsula regardless of the ideology or economic system of the European settlers (though borne here by European desire for commodities), yet played a crucial role in sustaining the European belief they were justified in imposing themselves, by allowing them to believe Maori, whose remnant population now clustered on the tip of the Peninsula, had always left the remainder of the land so untouched and uninhabited. The consequence of disease for the ownership of the Peninsula was, as Cronon argues in the context of New England, 'as much a socioeconomic fact as an ecological one.'

Crosby was correct to stress the importance of the entire suite of organisms that came with Europeans. But his explanations as to why they were successful were flawed. As Tom Griffiths and Libby Robin have noted, in Crosby's thesis too much human agency is removed. This thesis incorporates the psychological and social context of colonisation, showing how it shaped how and why other organisms were 'acclimatised' in New Zealand. Property systems were a crucial element of this

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84 Drayton notes that the verb ‘to improve’ originally meant to put to a profit, and in particular applied to the enclosing of waste or common land. *Nature's Government*, 45.
context. The transformation of New Zealand environments occurred when and as it did because the British technologies for imposing their particular agroeconomic systems were at a peak unprecedented in human history. Their systems of individualised and exclusive property rights over land and resources were especially important and defining elements of the agroeconomy. It is no accident that the primary economic and political issue of nineteenth century New Zealand history was division over the best way to organise land ownership. 89

John Weaver has elaborated this theme in a comparative treatment of how most of Crosby’s key ‘Neo-Europes’ – North America, South Africa, Australia and New Zealand – were transformed by predominantly British settler societies with an inherited tradition stressing the importance of individual and exclusive property rights – which became a driving obsession in colonising the new worlds, and ultimately shaping the modern world. 90 This thesis applies Weaver’s broad and comparative themes in a local context where the original plan for settlement began to be carried out immediately once certain property rights had been secured by a carefully negotiated purchase from the Maori, by the granting of Crown title, and by mapping sections for surveying. 91 Under pressure from Europeans who abhorred ‘the evils of common holding,’ Maori too chose to have their land surveyed, to divide their territory into discrete properties, and to individualise those properties. 92 It was thus the individual labour of property owners upon their sections that, cumulatively, wrought the collective transformation of the Peninsula.

Environmental history always faces the problem of demarcating its subject area. Local histories have been described as the bedrock of the discipline. 93 Studies seeking to integrate the complexities of environmental and cultural change are probably most convincing when conducted on a relatively small geographical scale, but over a long

90 Weaver, The Great Land Rush and the Making of the Modern World, 1650-1900, 4-5, 11.
91 Ibid., 13.
92 Quotation from ‘Reports from the Commissioner: Major Heaphy, V.C., to the Hon. The Native Minister: Report on the Native reserves in the Province of Otago,’ Appendices to the Journal of the House of Representatives 1870 VII., D, no.16, 24.
time span; this allows the influence of immersion in a specific environment to become apparent.94

Yet, again excepting Tutira, relatively few intensive local histories with an environmental focus have been conducted in New Zealand. Geoff Park’s lament for the loss of lowland forest ecosystems, *Nga Uruora*, explored through a series of case studies, is a notable exception. Another is Paul Star’s examination of the destruction of Seaward forest in Southland.95 The lowland forests of the Otago Peninsula are akin to those studied by Park and Star, especially in their diversity, and in *not* being burnt by Maori.

Studies of rural New Zealand and its historical development are surprisingly meagre given the importance of agriculture to New Zealand’s economy. This is especially true of agricultural history. We have only a single general, but outdated and fairly lightweight history of New Zealand’s farming.96 The work most relevant to this study is Ray Hargreaves’ fine thesis on the development of New Zealand farming prior to refrigerated shipping, 97 and Rollo Arnold’s work depicting the development and structures of European settler communities in forested environments. The latter provides valuable comparative analysis of some of the concerns of this study.98 Anthony Lynch’s study of small-scale early European farming in the Clutha district is the closest similar study in the Otago context.99

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97 Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration".
Canterbury is one region about which a growing range of excellent studies of interwoven environmental and cultural change have been produced. These include chapters in *Southern Capital: Christchurch* on the different Ngai Tahu and European relationships with the landscape by, respectively, Te Maire Tau, and Eric Pawson, and a range of contributions, largely from historical geographers, in the anthology *Rural Canterbury*. A range of interdisciplinary work on Banks Peninsula and the Natural History of Canterbury is in progress. Such work will provide a more fully explored parallel context for the material presented here—a small contribution to opening up a similar body of knowledge about New Zealand’s most ecologically diverse province, Otago.

The initial justification for this study proceeds from the premise outlined above, that local studies are the bedrock of environmental history. As outlined, too few such studies have been conducted to date for the general contours of environmental history of New Zealand to be confidently outlined, secure in the knowledge that they rest on a secure foundation of detailed, fine-grained analysis. This is particularly true of Otago, which is however the most ecologically diverse area of New Zealand, and so warrants a range of studies that isolate and inspect different aspects of its environmental variation.

The Otago Peninsula is almost the ideal subject for an intensive local environmental history. As the eastern remnant of a large volcanic complex, it is a distinctive landmass, almost an island, with a diverse and significant biota, and arguably as deep and continuous a human history as anywhere in New Zealand. The Peninsula is almost, but perhaps not quite, a perfect ‘bioregion’—a ‘natural geographic region’—which is the unit of historical study admirably advocated by Dan Flores. While the Peninsula is clearly distinctive in many ways, it is perhaps best considered as part of the remnant of the Dunedin Volcanic Complex, with its distinctive landforms, soils,


and botany. This includes the western side of Otago Harbour – and the harbour itself. This blending of land and sea environments would also make for a fascinating environmental history. The Peninsula has the advantage that it has formed a politically, and in many respects, culturally coherent unit throughout much of its history. As Flores has noted, politically-derived boundaries tend to be mostly useless in understanding nature.102 There are several respects in which this is so of the Peninsula – though it was a primary node of Maori settlement, for example, even the people who may have thought of it as their primary home still ranged over a much wider territory. However, by the close of the contact period the Peninsula contained the key boundary between Maori and European land in Otago, and was a county for much of the nineteenth century, and these political boundaries are helpful to understanding its environmental history.

The Otago Peninsula is also a rare case of a place which has remained a key focal point of Maori settlement, from soon after the initial settlement of New Zealand, until the present. Throughout the contact period, and into the twentieth century, it has contained the largest, and politically perhaps the most important community of Maori in Otago, and was certainly their largest remaining land base.

Further, because of its proximity to Dunedin Scottish settlement on the Peninsula was established early, and the Peninsula’s communities remained dominated by a number of relatively tight-knit families of Scottish settlers. Indeed, perhaps more than any other rural area of the Otago settlement, the Peninsula remained true to the small-farming ideals set out by the Scottish settlers.

In light of these factors, it is no exaggeration to say that the Peninsula has no equal in Otago as a place to examine change over time in the contrasting patterns of property adopted by Maori and European settlers as they adjusted to a new environment.

While it would be a very valuable exercise to extend this study towards the recent past, I do not think it is possible to do justice to such a range of material within one thesis. Forced to decide on a closing point, I have selected 1900 for three reasons.

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First, a range of very good data was produced that illuminates the state of the Peninsula environment in 1900. This includes the first valuation rolls for the Peninsula, which provide a wealth of detail relating to all its properties, and the mapping of the Peninsula by J.T. Neil, at an unprecedented level of detail and accuracy. It is therefore possible to establish a fairly detailed picture of the Peninsula as it was at the end of my period, something not possible for any earlier date. Second, save for a few families still occupying their ancestral land, by 1900 European settlers had wrested control (if not yet ownership) over the Peninsula from Maori. Third, by 1900 the Peninsula was fully owned or leased by individual settlers, and the combined efforts of these property owners had essentially completed the transformation of the Peninsula from forest into farm. The thesis thus surveys the period in which the settlers’ imposition of the doctrine of improvement, so closely tied to the valorisation of individual property in land, succeeded in making the Peninsula into a cultural landscape. Finally, at that point, at least some settlers had begun to question the forms into which they had chosen to fashion that landscape. It was now possible to ask of a remnant wetland on the Peninsula, as G. M Thomson did in 1899, whether or not ‘[n]ow that the age of destruction has passed, an era of improvement might well be inaugurated by the surrounding proprietors, and with a little care and some judicious planting, the spot might again be transformed into a place of beauty.'

New cultural forces were emerging to affect the dialectic of environmental and cultural change. Some few settlers, then, were now beginning to revision what ‘improvement’ might mean for the future of the Otago Peninsula.

In sum, studies of this kind provide environmental history in New Zealand with its ‘bed rock’. They form the solid foundation of detailed local knowledge that must be a crucial condition for any broader conclusions about how the specific experiences of Maori and European settlement in New Zealand relate to, or differ from, the broad patterns and themes that scholars have elsewhere identified. Until we have a much more detailed understanding of the different ways people have interacted with the very various environments of the New Zealand archipelago, we ought to be very careful about the general and casual ways we talk about the human encounter with ‘New Zealand’. We perhaps need the reality of such specific stories before the

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concrete can set on any overarching patterns. Within Otago, to date a somewhat neglected region for local environmental histories, the Otago Peninsula forms an ideal field of investigation.

1.3 Methods

This study is firmly located within the discipline of history, being a roughly chronological narrative primarily based on analysis of written sources. Its primary task is to construct a narrative that makes explicable environmental, economic and ideological change on the Otago Peninsula over the sweep of time from Polynesian settlement to the close of the nineteenth century. The narrative is divided into broad chronological periods, differentiated by the transition between different forms of property, and different relationships between people and the Otago Peninsula. Within each chronological period, change in the environment, and in human economy, and ideology, is discussed separately, before linkages are elaborated.

Surveying the longue durée is ambitious even in a local history. It requires assembling evidence drawn from several other disciplines, necessitating considerable caution, lest the result become 'a diverse soup of loosely related scholarship'. Marshall Sahlins once described interdisciplinary research as 'the process by which the unknowns of one’s own subject are multiplied by the uncertainties of some other science'. The ways in which disciplines constitute, organise, and recognise information are very different. Constructing a narrative drawing on several disciplines is therefore very risky: seeming agreement may be no more than coincidence, and points of difference may arise solely from contrasting methodology. In addition to such inherent difficulties, the limitations of the findings of many of these disciplines, as practiced here, present especial drawbacks as historical evidence.

The primary disciplines outside history that this work draws upon are findings from the life sciences (especially ecology, biology and marine science) to provide the primary context for evaluating environmental change, and archaeology and Maori

104 M. Mabin, cited in Pawson and Dovers, "Environmental History and the Challenges of Interdisciplinarity: An Antipodean Perspective," 54.
traditional history to describe change in 'prehistoric'. Scientific attention to the ecosystems of the Peninsula and its surrounding sea has been more comprehensive than for most areas of similar size in New Zealand, but there are still plenty of gaping holes in our scientific knowledge. No pollen studies, for example, have ever been done to establish more firmly the vegetation history of the Peninsula. Almost no specialised zooarchaeological work has ever been conducted here. My reconstruction of the flora is necessarily tentative, and relies on rather meagre historical sources, and extrapolations from the remnant plant associations. To try and counter my lack of a scientific background I have endeavoured wherever possible to check my findings and interpretations of that literature with people with relevant expertise in each of the fields I have drawn upon.

While archaeology has directly documented the presence of some species, much has to be inferred from other work conducted more or less close by. Archaeology in New Zealand cut its teeth on the Otago Peninsula, but such early archaeological work is no longer regarded as trustworthy. Both Maori tradition and European observations were recorded after European contact and therefore cannot be simply extrapolated

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107 Here I would like to acknowledge once again some of my especial debts, and pay tribute to the remarkable patience and kindness of John Jillett (marine scientist), Peter Johnson (botanist), and Anthony Harris (etymologist).

into the pre-contact past. European observations are moreover often based on a superficial acquaintance.\textsuperscript{109}

Still, the rewards of such broad interdisciplinary research can perhaps justify the risks, if sufficient precautions are taken. In particular, I do not think explanation of the environmental history of precontact Maori can afford to ignore any substantial body of evidence such as both archaeology and Maori tradition represent. To try and minimise the dangers of combining insights from each body of evidence, I have initially discussed what they can tell us about settlement of the Peninsula quite separately, before attempting a somewhat tentative synthesis.

As befits a detailed local history which attempts to answer a broad range of questions, this thesis has comprehensively surveyed a wide range of primary historical sources, including newspapers, diaries, journals, letters, reminiscences, official government records and statistics, company records, maps, photographs, and paintings.

These different sources help answer different questions. For the early contact period, I have of necessity relied most heavily on the journals, logs, and letters written by the crew and passengers of visiting ships. These provide eyewitness accounts of interaction with the Peninsula, and with Maori, often written soon after the events described. Reminiscences, by comparison, are drawn but not relied upon. The shipping records of foreign ports, in particular those of the Australian colonies, provide further information, and some (very patchy) economic data. After the advent of whaling, the diary and other records left by Octavius Harwood, store keeper and manager of the Weller's whaling station at Otakou, are the single most valuable source, providing insight into the day-to-day operation of the station, and the extent and variety of economic activity.

I must acknowledge that my study of this period has been immeasurably enriched by early access to an unparalleled and invaluable resource, now generally available: the volume edited by Ian Church, \textit{Gaining a Foothold: Historical Records of the East}

\textsuperscript{109} For discussion, see Atholl Anderson, \textit{The Welcome of Strangers} (Dunedin: University of Otago Press, 1998).
*Otago Coast 1770-1839*. This contains the full text of every known primary historical record of Otago up to and including the year 1840. Ian Church very kindly made an advanced draft copy available to me for the course of my research, and it has benefited enormously as a result. These records allow some more educated answers than hitherto possible to questions such as how flax-trading was established and carried on at Otago, and similarly for early sealing on and around the Peninsula.

For the post 1848 European settlement period, questions about the broader body of the settlers' societal attitudes and practices are key to understanding what drove environmental change. For gaining the fine-grained understanding of this period needed for an intensive local history I — like Paul Star, and Rollo Arnold — regard newspapers as our most rewarding source. The Otago settlers began producing newspapers almost as soon as they arrived, and these were very widely read, and contributed to. As Rollo Arnold has stressed, they also contain a dual focus on local minutiae and global events that is crucial for understanding the identity of the migrant European society as it established itself here. Newspapers are our best sources for not only developing a thorough understanding of the ways that settlers exerted themselves, day by day, to make these changes, but also for the gradual reciprocal adaptation of nineteenth-century New Zealand settler society to those changes, and the corresponding shifts in contemporary belief about the environment of the Otago Peninsula and people's places within it. To this end, I have read all issues of the *Otago News* (Otago's first newspaper), the *Otago Journal* (mouthpiece for the New Zealand Company and the Otago Lay Association in their efforts to promote settlement) and the *Otago Colonist*, published 1857 to 1863. I also conducted an intensive search of the weekly newspaper *Otago Witness*, from first publication in 1851 until 1900, a process recently made much easier by the availability of 'Papers Past', the online searchable database provided by the National Library of New Zealand. Thus, columns such as 'Chats with the Farmers' in the *Otago Witness*.

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where local correspondents provided close descriptions of the operations of individual farming properties, feature prominently in my analysis. Only such an intensive search affords an insight into progressive developments in wider public opinion, notably something not captured by analysis of political papers.

Sequences of topographic and cadastral maps and surveys were also crucial sources, especially given my emphasis on property and resource use. Topographic maps can document changes in the types and areas of vegetation cover, density of inhabitation, farming intensity, and transport links. Map sequences for the Otago Peninsula mark the parameters of part three of this thesis: Tuckett’s ‘Sketch Map of the Rural Districts of New Edinburgh 1844,’ and Kettle’s ‘Plan of Otakou 1847’ outline which areas were considered suitable for suburban or rural settlement, and begin the mapping of the shapes into which the Peninsula was to be divided. The progress of fulfilling and adapting to this plan is shown by cadastral maps issued in 1878 and 1896. These are literally designed to document shifting patterns of occupation as settlement adjusts its original plans: this is the clearest possible reflection of adaptation to ecological and economic circumstances.

Maps provide snapshots of those changing circumstances. Gillies’ ‘A Topographical Survey of the Otago Peninsula in 1859,’ provides a general depiction of the vegetation cover, which is supplemented by the more detailed surveys of 1862 and 1863. Finally, in 1901 J.T. Neill’s ‘Military Survey of the Peninsula’, at 10 chains to the inch, shows the location of all landholdings and their homesteads, gardens, and fences, along with the other key elements of settlement such as roads and tracks; the remaining areas of forest, swamp, and sand dune are also depicted, as they were at the close of my period.

In 1897 details of every Peninsula property were noted in the first District Valuation Rolls. These recorded a wealth of detail. They documented amongst other items, the extent of every title; the name of its owner and occupier; their occupations; the land uses adopted such as agriculture, pasture, and unused land, and the area of those uses; the different sorts and extent of unused land – bush, swamp land, stony land; the age and condition of pasture; the number, age, condition, value, and building materials of all dwellings and all other buildings distinguished as dairies, byres, piggeries, stables,
sheds and so forth. Using GIS systems, I have represented illustrative aspects of this data for each landholding as it existed on the Otago Peninsula in 1897. This has created a fairly detailed picture of the state of the Peninsula’s settlement and the relationship of each landholding to its environment as it was just prior to 1900, the end of my study period.

1.4 Structure

This thesis is in three parts. Part I: ‘the Primordial Peninsula and People’ consists of three chapters. The first of these, chapter two, provides two very brief narratives: a short survey of the ‘deep time’ evolution of the Otago Peninsula, and an outline of the economy and culture brought to that environment by Polynesians. This frames the material presented in chapter three, which discusses the economic patterns and ecological impacts that occurred as Polynesians became Maori in settling on the Otago Peninsula. It focuses on the ecological effects of operating a settlement pattern orientated around ‘transient villages’ – intensive settlements located within dense patches of large game – between, approximately, the twelfth and thirteenth century AD and perhaps the close of the fifteenth century. Chapter four considers the cultural and economic adjustments made after large game species such as moa and seal disappeared or diminished. It describes adjustments made over the period between about the start of the sixteenth century until around the end of the eighteenth century, before the first effects of European contact. It argues that Maori retained cultural forms such as permanent villages in the face of ecological change by developing new ways of allocating, harvesting, preserving, transporting and storing resources.

Part II, ‘Takata Pora: the World Washes Ashore’ describes the ‘contact period’ on and around the Otago Peninsula. Chapter five commences in 1770 with the first European sighting and naming of aspects of the Peninsula, on James Cook’s first voyage to New Zealand. It surveys changes in ecology and Maori economy that occurred as a result of the transient contacts between sealers, traders and explorers that Cook’s descriptions encouraged. Chapter six commences with the first European settlement on the Peninsula, in the form of the shore whaling stations established there from 1831, and describes the hesitant development over the next decade and a half of a
‘middle ground’ in which cultural contact could be negotiated, and which mediated ecological change. It then analyses the key event of this period: the sale of most of the Peninsula as part of the transfer of the 533,000 acre ‘Otago Block’ to the New Zealand Company in 1844. Throughout human history until this point, the Peninsula was the key focal point of regional history. But soon after the sale of the Otago Block, most of the Peninsula became placed within the plans of the Otago settlement; this has gradually rendered the Peninsula as a suburban and rural adjunct to the city of Dunedin.

Part III, ‘Improving God’s Earth’ documents the intertwining processes of environmental, economic, cultural and ideological change that accompanied the settlement of the Peninsula from 1848 up until the close of the nineteenth century. It consists of three chapters. Chapter seven surveys the hesitant and slow establishment of the Otago settlement and its relations with the Peninsula between 1848 and 1861. Between the arrival of the first settler ships in 1848 and the discovery of gold in 1861 the infant settlement struggled. Dunedin grew to become a village of little more than a thousand people, and only a few settlers moved out onto the Peninsula to establish farms. This initial spread of settlement slowly seeped on to the Peninsula on two fronts. Both took advantage of access over water because, to all intents and purposes, the Peninsula was still an island. Accessing the Peninsula was least difficult from the site of Dunedin by boating across to Andersons Bay, while from Port Chalmers people crossed the harbour to Portobello. The difficulties these early settlers faced in clearing land, cultivating crops, and delivering them to market establish themes that dominate subsequent chapters.

Chapter eight describes the crucial period following the discovery of gold in 1861 and the extraordinary influx into Otago of tens of thousands of people. The gold rushes provided the capital, labour, and markets for the expansion of settlement throughout Otago. Thus from the 1860s the Peninsula’s forest was cleared and replaced with crops and then grass and cattle for dairy farming, in an extremely rapid ecological and economic transformation. By 1880 much of the land suitable for crops and pasture had been taken up. The chapter charts the cascading ecological implications of these processes.
Chapter nine examines the effects of the intensified and changing land uses from 1881 until the end of the century, by which time farming had assumed well-established patterns. Dairy farming dominated the Peninsula during this period; it was sometimes referred to as ‘one large dairy farm’. However, other land uses also emerged, especially sheep farming on more remote areas and steeper slopes, while there were forays, albeit on a minor scale, into lime burning for cement, flax-milling and gold-mining also. By 1900 over two hundred farms were established on the Peninsula. The great majority of the original forest cover had been cleared, all arable land suitable for ploughing had been broken up, and English grasses and crops had been sown in permanent pasture on most of even the steepest and stoniest slopes. This period also saw the introduction of a suite of new predators. Settlers provided vectors for the introduction of ship rats, stoats, ferrets, weasels, and hedgehogs, and their populations on the Peninsula thrrove at the expense of birds, lizards and invertebrates.

By the turn of the century then, every aspect of the Peninsula environment was substantially different from what it had been only fifty years before. The chapter concludes with a discussion of the cultural effects of these developments. Settlers increasingly reflected on their achievements – the ‘improvements’ that constituted the new cultural landscape they had fashioned from the Peninsula. As settlers found themselves at home, some began to count the costs of what they had achieved.

The story of the Otago Peninsula is one that provides, in microcosm, a window through which to view New Zealand’s environmental history. It has seen intensive and continuous human occupation of a depth and variety that very few other places in this archipelago could lay claim to. As elsewhere in New Zealand, in sustaining their societies humans have dramatically altered the Peninsula environment, and decimated the diversity and fecundity of its life.

If, as William Cronon reminds us, all our stories draw their moral force from the difference between their beginning and their end, then we must remember the scale of change the Otago Peninsula has undergone, from its beginnings in fire, to the farmed
landscape and suburban villages of 1900. European settlers had created a stark landscape, with a narrow ecology, devoted to the production of grass, in which those few who cared to know thought the indigenous biota doomed to extinction. But we cannot avoid also viewing that story from the vantage of the present, in which the people of the Peninsula are increasingly reliant for their survival on the remaining wildlife of the land and surrounding sea, and are learning to love and foster those forms of life. The lesson of that story is that despite the ongoing impacts of our arrival, the Otago Peninsula has never been wholly tamed, rather its people have.

The Primordial Peninsula and People

E kore au e ngaro, te kakano i ruia mai i Rangiatea

'I shall not perish, but as a seed sent forth from Rangiatea I shall flourish' \(^1\)

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Chapter Two: The Primordial Peninsula and Polynesians

From the first glimmer of light,
Emerged the long-standing light until light stood in all quarters,
Encompassing all was a womb of emptiness,
An intangible void intense in its search for procreation
Until it reached its ultimate boundaries and became a parentless void with the potential for life

2.1 Natural history of the Otago Peninsula

New Zealand’s oldest rocks and life forms stem from Gondwana, the once vast land that also gave birth to Australia, Africa, Antarctica, South America and India. What has become the South Island first formed as fragments of continental plate fused to Fiordland, then a small stretch of Gondwana’s coast. About 160 million years ago Gondwana began to break up. Some 80 million years ago the section of continental crust of which New Zealand’s islands are small extrusions began to tear free from Gondwana, and eventually drifted southeast, opening up the Tasman Sea. Cast off before the radiation of mammals, these lands began the long isolation that has ensured the peculiarity of the older plants and animals they bear.

As it moved, southern New Zealand gradually eroded, becoming a vast low-lying plain by 65 million years ago; then the seas began to rise, and by about 34 million years ago covered most of the land. Some geologists and paleontologists have argued that New Zealand was completely submerged in this ‘Oligocene drowning’, but the similarity of species present before and after this event are good biological grounds

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for thinking some land remained exposed.\textsuperscript{4} Regardless, the seas only receded to approximate the present coastline some 13 million years ago.\textsuperscript{5}

At that time, the continental plate of the Otago region was being stretched, lifted, and had long begun cracking. Molten rock – magma – began to well towards the surface of the earth, and pool in chambers beneath the Dunedin area. The Dunedin volcano was beginning eruptions that would last for three million years.\textsuperscript{6}

The Otago Peninsula is a remnant of this volcanic activity, which began as a submarine eruption of basalt magma and tephra beneath the waters in the vicinity of what are now Port Chalmers and Portobello. There the first of many cones emerged from a number of magma-filled chambers, spread over 300 square kilometres.\textsuperscript{7} The volcanic complex centred around Otago Harbour gradually eroded to leave a western rim of hills – Mopanui, Mihiwaka, and Mt Cargill – while its eastern edge became the Peninsula (Figure 2).

Since the basic geological structure of the Peninsula was formed, air and water have shaped its landforms and the life that clung to them. The world cooled over 10 million years. Ice sheets spread from the poles. By two million years ago the South Island was periodically smothered by the crushing weight of vast glaciers. Some twenty glacial episodes occurred, punctuated by much briefer periods of relative warmth similar to the temperatures of today. During glaciations much of the world’s water was locked up as ice, and sea levels fell. This exposed the continental shelf’s thick beds of sediments to the action of wind, which blew dust over southern New Zealand, forming thick layers of loess on the land, now the yellow-brown clay of most of the Peninsula’s soils.\textsuperscript{8}


\textsuperscript{5} Reay, "Geology," 9.

\textsuperscript{6} Ibid., 13-14; Jane Forsyth and Glen Coates, \textit{The Dunedin Volcano} (Dunedin: New Zealand Geological Survey, 1989).

\textsuperscript{7} Stefan Olsson, "The Geology of the Portobello Peninsula, Proposal of an Oversaturated Lineage within the Dunedin Volcano" (Bachelor of Science Dissertation, University of Otago, 2001), 2-7

Figure 2: Geological evolution of Otago peninsula

Given sufficient time water wears all things. The Pacific Ocean's currents and swells have gradually smashed the long tongues of basaltic flow rock into cliffs. Erosion by streams has gouged large bays and inlets. Streams flowing off either side of a ridge that once rose between Portobello and Port Chalmers cut out Otago Harbour. The two peninsulas jutting out from either side of the Harbour, and Quarantine and Goat Islands, are the remnants of this ridge, drowned when the seas began to rise at the end of the last glaciation.\(^{10}\) Sea levels peaked a little above present levels about 6,500 years ago. At this time the Peninsula became an island.\(^{11}\) It has only gradually rejoined the mainland as the northerly currents carried quartz sand up from the mouth of the Clutha and deposited it to form the tombolo of sand upon which South Dunedin now sits. The Peninsula seen today is thus a sprawling terrain of volcanic cones of hard basalt rock flanked by eroding lava tongues, in between which are valleys and estuaries gouged out of consolidated rock and ash by the action of water.\(^{12}\)

The life the Peninsula supported changed with the climate. In the last major full-glacial episode between 25,000 and 15,000 years ago, massive glaciers extended out over much of the southern coastline, though not over the Peninsula. Southern New Zealand became a barren, bare and eroding land. Life retreated to the coasts, where broken country such as that of the Otago Peninsula and the Catlins coast became perhaps a last refuge for many species, including principal canopy trees such as the beeches (*Nothofagus* spp.), matai (*Prumnopitys taxifolia*), miro (*Prumnopitys ferruginea*), totara (*Podocarpus totara*), Hall's totara (*Podocarpus hallii*), rimu (*Dacrydium cupressinum*) and kahikatea (*Dacrycarpus dacrydoides*).\(^{13}\)

As the Earth warmed rapidly from about 15,000 years ago, the ice retreated and an equable climatic regime commenced. While it lasted, lacebark (*Hoheria angustifolia*)

\(^{10}\) Patricia Grieg, "Sand and Plant Community on Otago Peninsula: A Study of Three Coastal Areas and Their Vegetation" (Masters, University of Otago, 1965), 13; Huggett, "The Historical Geography of the Otago Peninsula", 2.


\(^{12}\) Olsson, "The Geology of the Portobello Peninsula, Proposal of an Oversaturated Lineage within the Dunedin Volcano", 2-7.

and ribbonwood (*Plagianthus regius*) forests, followed by podocarps and tree ferns, spread from coastal refugia to cover the land. The climate began to shift again between 7,000 and 5,000 years ago, generally becoming cooler and moister, but still punctuated by warmer periods, and marked by more extreme seasonal changes. For the last several thousand years, the climate has veered between wet and dry periods, reflecting a less stable climatic regime.

Overall, the Otago Peninsula, lying at around 46° south, has experienced a cool, temperate maritime climate since the ice receded. Southern New Zealand's weather has long largely arrived from the west, driven by winds circling the pole. Air masses arrive only after crossing large stretches of ocean that stabilise temperatures; New Zealand therefore does not experience the seasonal temperature extremes found at the same latitudes in the northern hemisphere. However the air masses arriving here often bear a lot of moisture. The Southern Alps push this moist air higher, so that it cools, condenses, and rains down upon the west of the South Island, which is much wetter than the east. It also becomes wetter as one moves south to higher latitudes.

Yet even within a small area such as the Peninsula there are significant climatic differences. On the inner coast where it abuts Otago Harbour, the Peninsula is comparatively warm, sunny, and sheltered 'with a micro-climate not bettered elsewhere on the Otago coast'. The outer coast is exposed to the action of the Pacific Ocean and the south-westerly that is the coldest and strongest of the prevailing winds of winter and spring (especially in the wake of cold fronts); it is very much more rugged than the sheltered inner shoreline, which is exposed only to the north-
east, a much milder and lighter wind, most often experienced as a sea breeze characteristic of summer and autumn.\(^{19}\)

Rainfall and the likelihood of drought have largely determined where the different types of forest became established in southern New Zealand after the ice receded. Coastal Otago was wet and warm enough to support the establishment of a diverse conifer-broadleaved forest dominated principally by rimu.\(^ {20}\) In just a few thousand years before the arrival of human beings, the Otago Peninsula became clothed in this forest that would have extended inland as far as the eye could see.\(^ {21}\) The crowns of rimu, miro, matai, totara and, in places, kahikatea, floated above a canopy of many kinds of smaller trees, including broadleaf (Griselinia littoralis), lemonwood (Pittosporum eugenioides), mahoe (Melicytus ramiflorus), kohuhu (Pittosporum tenuifolium), fuchsia (Fuschia excorticata), kowhai (Sophora microphylla), lancewood (Pseudopanax crassifolius), narrow-leaved lacebark (Hoheria angustifolia), lowland ribbonwood (Plagianthus regius), pate (Schefflera digitata) three-finger (Pseudopanax colensoi), ngaio (Myoporum laetum), manuka (Leptospermum scoparium), kanuka (Kunzea ericoides) and Coprosma species.\(^ {22}\)

The mosaic of trees mirrored the broken topography of the Peninsula, and the resulting differentials in soils, access to water, and exposure to strong, cold, and salty south-westerly winds. The larger podocarps grew around the inner harbour hillsides, and in gullies; drier soils on ridges supported broadleaf, ti (Cordyline australis), kanuka and other smaller trees and shrubs. Forest cover was probably broken only at the margins of the land and sea, where long wind-swept beaches sheltering estuarine flats alternated with high-cliffed headlands. Sand dunes fronting the beaches were initially bound by the brilliantly orange pingao (Desmoschoenus spiralis), which

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\(^{21}\) Hamel, The Archaeology of Otago, 7; Johnson, "Forest and Scrub Vegetation on Otago Peninsula."

\(^{22}\) Huggett, "The Historical Geography of the Otago Peninsula", 11; Johnson, "Forest and Scrub Vegetation on Otago Peninsula," 8; Johnson, Otago Peninsula Plants: An Annotated List of Vascular Plants Growing in Wild Places, 8.
stabilised the sand allowing the cover of flax (*Phormium tenax*), scrub, and finally forest, to take hold.

These lands bore a distinctive and diverse fauna. A great variety of birds, lizards, and invertebrates filled roles elsewhere performed by land-based mammals, which New Zealand lacked, save for bats. The Otago Peninsula, consisting of many hills cut by creeks and streams draining into estuaries, swamps and lagoons, and surrounded by a rich ocean, supported a diverse and plentiful avifauna. As many as seven species of moa roamed over the Peninsula ranging from the smaller turkey sized *Emeus Crassus*, to the massive 200 kilogram *Dinornis giganteus*; each took advantage of different aspects of the Peninsula’s diverse environments.\(^{23}\) There were other big birds here too, all now extinct: the giant rail (*Aptornis defossor*), the New Zealand swan (*Cygnus sumnerensis*), and (perhaps) a large flightless goose (*Cnemiornis calctrans*).\(^{24}\)

Multitudes of smaller birds thrived in the Peninsula’s forests and around its shores. The forest floor sheltered large spotted kiwi (*Apteryx haastii*), little spotted kiwi (*Apteryx owenii*) and South Island brown kiwi (*Apteryx australis australis*), weka (*Gallirallus australis*), the extinct New Zealand quail (*Coturnix novaezelandiae*), and the remarkable parrot the kakapo (*Strigops habroptilus*). Other parrots such as kaka (*Nestor meridionalis*), yellow-crowned parakeets (*Cyanoramphus auriceps*) and red-crowned parakeets (*Cyanoramphus novaeezelandiae*) flitted through the canopy and forest understory, alongside some twenty species of passerines (song birds). These included wrens (the stout-legged wren *Pachyplichus yaldwyni*, Lyall’s wren *Traversia lyalli*, bush wren *Xenicus longipes*), bellbird (*Anthornis melanura*), tui (*Prosthemadera novaeezelandiae*), New Zealand pipit (*Anthus novaeezelandiae novaeezelandiae*), South Island saddleback (*Philesturnus carunculatus*), kokako (*Callaeas cinerea*), and the extinct New Zealand crow (*Corvus moriorum*).\(^{25}\)

\(^{23}\) The full list of moa species for which remains have been recovered on or very near to the Peninsula includes: *Anomalopteryx didiformis, Pachyornis elephantopus, Emeus crassus, Euryapteryx geranoides, Dinornis stuthoides, Dinornis novaeezelandiae*, and *Dinornis giganteus*.

\(^{24}\) R. McGovern-Wilson, "Small-Bird Exploitation, an Archaeozoological Approach to the Study of Fowling in Southern New Zealand" (M.A., University of Otago, 1986), 107-37. Inclusion of the goose is perhaps a little speculative – it has not been found in the Dunedin area, though located both inland and on the Catlins coast. See Hamel, *The Archaeology of Otago*, 26.

\(^{25}\) This list has been compiled from a number of archaeological and historical sources. For archaeological data see primarily McGovern-Wilson, "Small-Bird Exploitation, an Archaeozoological Approach to the Study of Fowling in Southern New Zealand"; Hamel, *The Archaeology of Otago*; Shar Briden, "Archaeofauna from Sandfly Bay (144/68), Otago Peninsula" (Post-Graduate Diploma, University of Otago, 2005); Jane Davies, "The Prehistoric Environment of the Dunedin Area: The Approach of Salvage Prehistory" (Master of Arts, University of Otago, 1980); T. H. Worthy and R.N.
Waterfowl inhabiting the Peninsula’s estuaries and lagoons included, besides the
goose and swan, all four extant species of native duck (the paradise duck \textit{(Tadorna variegata)}, blue duck \textit{(Hymenolaimus malacorhynchos)} grey duck \textit{(Anas gracilis)},
brown teal \textit{(Anas aucklandicus)}), as well as the extinct Finsch’s duck \textit{(Euryanas finschi)}. A harrier, a falcon \textit{(Falco novaeseelandiae)}, and the massive Haast’s eagle \textit{(Harpagornis moorei)} preyed upon these other birds during the day, while morepork \textit{(Ninox novaeseelandiae)} and laughing owl \textit{(Sceloglaux albifacies)} hunted at night. This range of species included virtually all of the forest bird species now extant in southern New Zealand, and many others now extinct.

Sea birds were especially numerous. It is difficult today to convey the scope and scale of such an extraordinary abundance of birds. People today may trumpet the Peninsula as a wildlife destination for tourists largely on the basis of the many seabirds there – but once, shearwaters \textit{(Puffinus spp)} and petrels \textit{(Pterodroma, Pelacanoides spp)} albatross and mollyhawks \textit{(Diomedia spp)}; shags and cormorants, penguins, prions, terns, and gulls flocked here in teeming breeding colonies of hundreds of thousands, if not millions of birds. Several species from each genus in this list bred here, and more visited – there were once five breeding species of penguin, and at least that many species each of petrels, shearwaters, shags, and mollyhawks or albatross.\textsuperscript{26} Petrels and

\footnotesize{Holdaway, \textit{The Lost World of the Moa} (Christchurch: Canterbury University Press, 2002); Alan Tennyson and Paul Martinson, \textit{Extinct Birds} (Wellington: Te Papa Press, 2006). For historical sources see Aparata Renata, “The Native Birds of the Otago Peninsula Past and Present,” (Hocken Library, 2001). Not all of the species listed here have been recorded in archaeological contexts on the Peninsula. However I argue this is primarily a function of poor reporting by early excavators. As Hamel notes, ‘[I]t is typical of the distribution of small bird bones in middens that the greater the quantity of midden analysed, the greater the number of birds identified.’ Hamel, \textit{The Archaeology of Otago}, 23. Very little midden has been analysed for bird species on the Otago Peninsula. But at Long Beach, just a few kilometres to the north (as the bird flies), where Helen Leach and Jill Hamel conducted a thorough analysis of 50m\textsuperscript{2}, some 60 small bird species were discovered.\textsuperscript{26} The somewhat loose wording again reflects the lack of specific data from the Peninsula. See McGovern-Wilson, "Small-Bird Exploitation, an Archaeozoological Approach to the Study of Fowling in Southern New Zealand", 51-53 especially; Shar Briden, "Archaeofauna from Sandfly Bay (I44/68), Otago Peninsula" (Post-Graduate Diploma, University of Otago, 2005), 33 especially; Jane Davies, "The Prehistoric Environment of the Dunedin Area: The Approach of Salvage Prehistory" (Master of Arts, University of Otago, 1980); Hamel, \textit{The Archaeology of Otago}, 23-26, 210 especially. Current bird distribution data that distinguishes visiting from breeding birds are also useful. See C.J.R Robertson et al., eds., \textit{Atlas of Bird Distribution in New Zealand} (Wellington: The Ornithological Society of New Zealand, Inc., 2007). Petrel species archaeologically recorded on the Peninsula include the white-faced storm petrel \textit{(Pelagodroma marina)}, common diving petrel \textit{(Pelacanoides urinatrix)}, mottled petrel \textit{(Pterodroma inexpectata)}, Cooks petrel \textit{(Pterodroma cookii)} and South Georgian diving petrel \textit{(Pelecanoides georgicus)}, and at Long Beach also the giant petrel \textit{(Macronectes giganteus)}. Only fluttering shearwater \textit{(Puffinus gavia)} and sooty shearwater \textit{(Puffinus griseus)} have been archaeologically recorded on the Peninsula, but short-tailed shearwater \textit{(Puffinus tenuirostris)}, and little shearwater \textit{(Puffinus assimilis)} were found at Long Beach. New Zealand white-capped}
shearwaters were especially numerous. New Zealand once supported populations of these birds that were one or two orders of magnitude greater than those of today: hundreds of millions if not billions of birds. The best remaining illustrations of this former abundance are the bird populations of the subantarctic islands. The two main landmasses of The Snares, for example, which at a combined land mass of 330 hectares are mere specks in the surrounding sea, today support up to 2.75 million breeding pairs of petrels, fulmars and prions. This is a greater number of seabirds than exist today in the entirety of the British Isles. In 1910 Herbert Guthrie-Smith, perhaps the first, and still probably the most important of New Zealand’s environmental historians, described the experience of being amidst diving petrels at dusk on the island Big South Cape, near Rakiura (Stewart Island):

Now with the faster fall of Petrels from the sky – much as the congregation of an old-fashioned kirk follows the precentors lead – bird after bird, pew after pew chimed in, louder and louder the commotion grew. From twos and threes, from dozens, from scores... from tens of thousands of burrows, rose an intensifying babel of sound. By fullest dark, from that lonely island a roar ascended to the sky, an unceasing comminglement of sound, hour after hour sustained, seething, simmering, bubbling, the strangest, uncanniest, most unbirdlike epithalami.

The Otago Peninsula was once such a place.

Seabirds are attracted to the Peninsula because of the richness of the surrounding ocean. The ocean water immediately off the Otago Peninsula derives from subtropical currents that eddy out from the tropical Pacific and Indian Ocean, are blown south and west into the Tasman Sea, strike Fiordland, curl round the south coast, and

mollymawk (or Shy mollymawk, Diomedea cauta steadi), Buller’s mollymawk (Diomedea bulleri) royal albatross (Diomedia e. epomophora), wandering albatross (Diomedia exulans), and light-mantled sooty albatross have been found on the Peninsula, and Salvin’s mollymawk (Diomedea cauta salvini) still occasionally visits today. Shags recorded archaeologically include Stewart Island shag (Leucocarbo chalconotus), and spotted shag (Stictocarbo punctatus), with pied shag (Phalacrocorax varius), and little shag (Phalacrocorax melanoleucos) found at Long Beach (little shags, Stewart Island and spotted shags still breed in numbers on the Peninsula). Fiordland crested penguins (Eudyptes pachyrhynchus), blue penguins (Eudyptes minor), and yellow-eyed penguins (Megadyptes antipodes) (the latter two still extant) are archaeologically recorded from the Peninsula. Snares crested penguins and erect-crested penguins were found at Long Beach. Other ecologically important breeding seabird species include fairy prions (Pachyptila turtur) and broad-billed prions (Pachyptila vittata), Southern black-backed (Larus dominicanus) and red-billed (Larus novaehollandiae) gulls, black-fronted (Sterna albostriata) and white-fronted (Sterna sriata) terns, all of which are archaeologically recorded.

27 Worthy and Holdaway, The Lost World of the Moa, 444.
28 David Young, Our Islands, Our Selves (Dunedin: University of Otago Press, 2004), 29.
29 Herbert Guthrie-Smith, Bird Life on Island and Shore (Edinburgh/London: Blackwood and Sons, 1925), 128-29.
then pour north along the South Island. Known here as the Southland Current, it swells north along the Otago Peninsula at some 17 kilometres a day. The current is confined to the strip of water above the continental shelf (usually about 30 kilometres wide) that gradually deepens from the shore to a depth of about 125 meters. At the edge of the continental shelf, the slope falls away dramatically to reach a depth of 1300 meters off the Peninsula. This marks the boundary between the Southland current and cool, but very rich, waters from the Subantarctic. Thus, moving offshore from the Otago Peninsula three distinct water masses are successively encountered: shallow sediment-rich coastal water over-rides the salty Southland Current, which is bordered at the edge of the continental shelf by subantarctic water.\(^{30}\) Each water-mass supports its own distinctive ecosystems, while many other species also mass at their confluences or migrate between them.\(^{31}\) Where subantarctic water meets the Southland current at the edge of the continental shelf is a particularly rich fishery, and it is here that the lights of squid boats are today seen strung like beads of light along the unseen horizon.

The band between land and the edge of the continental shelf is very narrow off the Otago Peninsula; where Cape Saunders juts out towards its edge it is only 10 kilometres away. This makes the Peninsula an ideal roost, haul out, or breeding ground for sea birds and sea mammals. According to Trevor Worthy and Richard Holdaway, the ecological importance to prehistoric New Zealand of seabirds, particularly the petrels, cannot be overestimated.\(^{32}\) By feeding from the ocean and excreting, shedding feathers, and dying on shore they linked the ecosystems of the sea to those of the land— their feathers, in fact, bore nutrients here from the northern hemisphere. They injected simply vast quantities of nutrients into soils around their colonies—in the order of hundreds of kilos of nitrogen and phosphorus each year for thousands of years—sustaining the plants and micro organisms upon which terrestrial

\(^{30}\) Darby et al., eds., *The Natural History of Southern New Zealand*, 318-19.


\(^{32}\) Worthy and Holdaway, *The Lost World of the Moa*, 441, 44.
life depends. 33 Holdaway estimates as much as 30 percent of the annual nutrient budget of New Zealand was once provided by seabirds.34

The proximity of the Peninsula to these water masses, the subantarctic water in particular, explains the appeal of the outer coast for seabirds, but there are other ways the sea contributes to the especial richness of marine life found here. The inshore northerly current strikes the Peninsula as it juts out at an oblique angle from the general line of the South Island coast. This angled interface between land and sea exerts a powerful influence on the ecology of the Peninsula and coastal waters to the north. For as the current spills north around the Peninsula, a southerly current is generated on its inner margin, and an eddying backwash forms in the lee of Taiaroa Head, swirling around Blueskin Bay.35

This eddy is a principal reason why Otago Harbour and the inlets just to the north in Blueskin Bay are so rich in marine life. The eddy recruits and retains drifting plankton such as the larvae of inshore spawning fish like flounder (Rhomboslea sp.) and sprats (Sprattus sp.), and crustaceans such as the white shrimp (Nyctiphanes australis), or bright–red rotting 'whale-feed', juvenile form of the squat lobster (Munida gregaria).36 Twice daily the tide draws this plankton-rich water into and out of the Otago Harbour. Vast populations of zooplankton wash up here, most commonly in summer. Such plankton are crucial to the diet of not just baleen whales, but a great many still-familiar pelagic (surface-dwelling) fish including sprats, pilchards, mackerels (Trachurus sp.), and in turn their predators like barracouta (Thrysites atun). Dense shoals of feeding fish often form in a swarm of zooplankton; above all this

broiling life a myriad of seabirds invariably feast. David Graham described such a sight off Cape Saunders in the early 1930s thus:

We observed these fish [pilchards] travelling north, a sight which can only be described in superlatives. As far as the eye could see these small fish were swimming in a northerly direction, accompanied by flocks of predatory birds, such as Mutton-birds, Mollymawks, Cape Pigeons, Gulls and others. There must have been hundreds and perhaps thousands of tonnes of this edible fish waiting for an enterprising fleet of fishing boats and canning factories... They were so abundant that when the launch was moving it seemed as though we were speeding over a floor of silver... 37

This must suffice to gesture at the plenitude that would have welcomed the first people to arrive here and to observe the Otago Peninsula, a complex and changing interface between land and sea, with many bays, white beaches and estuaries separated by cliffed headlands, and backed by steep hills, all swathed by this dense forest, echoing with a constant chatter of bird song. Surrounding the land, a sea seen frothing with schooling fish, with a great nimbus of birds flying to and fro overhead and filling the sky.

Sea birds may have provided another sort of link between far flung ecosystems: it was perhaps the predictability and number of migratory sea birds on their annual southern migration that first indicated the presence of land, lying somewhere over the edge of the horizon, to the first people to arrive here, the Polynesian colonisers of New Zealand. 38

There are several long-standing Maori traditions in which migratory birds fulfilled this role. Perhaps too it is significant that southern Maori tradition associates the first exploration of the sea with a bird’s feather, sent out to discover whether the sky descended till it lay upon the sea, or whether the sea continued beyond the horizon. 39

The feather’s battered appearance upon return indicated there was a gap between the

sea and sky, so the first canoe was built, and named Huruhurumanu, for it was 'light as a bird's feather'.

Shearwaters and petrels, especially the sooty shearwater (*Puffinus griseus*) (known to Maori as titi, and to Europeans as the muttonbird), might have been the most reliable guides. Prior to Polynesian depredation simply fabulous numbers of them flew south in early summer over East Polynesia heading for New Zealand – and returned just as predictably each autumn. Millions of these birds make the same journey even today, so that: ‘[f]rom the last few days in September until the middle of November an observer on any headland of the Otago Peninsula in New Zealand may see this species flying south in an endless stream’.

If this conjecture holds water, we should envisage Polynesian voyagers following the low flying birds south in large double canoes over several weeks in early summer. This was also the time of year when the chances of harnessing a prevailing north-easterly wind were greatest, and the risk of encountering tropical cyclones smallest. This was an incredible feat, hurling people, their plants, and their animals, over 3,000 kilometres of open sea to land on the alien shores of lands vast beyond their comprehension. Who were these people, and why might they have attempted this?

### 2.2 Origin and dispersal of the Polynesians

The ancestors of these Polynesian voyagers had spread east from Asia into the Pacific over the previous several thousand years. All such dates are contested, but current orthodoxy suggests from around 2,000 BC some of these people began to move out from Papua New Guinea and the neighbouring islands that make up Near Oceania, through the Solomons, the islands of Melanesia, and New Caledonia, to colonise...
Remote Oceania, beginning with Fiji, Tonga, Samoa, and the other islands of Western Polynesia, where an ancestral culture common to all Polynesians developed. The pattern, if not the timing, of subsequent colonisation is fairly clear. Polynesians successfully settled almost all the far flung islands of Remote Oceania, beginning with the archipelagos of Eastern Polynesia, including the Cook, Austral Islands, and Society Islands, from which, perhaps as little as a few hundred years later, they launched the expeditions that settled New Zealand, the last major landmass on this planet to be discovered and settled by human beings.

Polynesian societies were and are essentially ordered by status stratification, which follows lines of seniority in descent: genealogy primarily determines a person’s mana (prestige, or rank), and hence the power to own and control territory and essential resources. Though the degree of stratification varied across time and space, at all times, and in all places in Polynesia, individuals with the most mana (prestige, authority) maintained power over communities tied by kinship, and over territories and resources distributed according to kinship. A wide range of environments provided such resources: Polynesian economies centred around both intensive agriculture on islands and exploitation of fisheries from Te Moana nui o Kiwa, the

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46 The particular islands from which these colonising voyages launched are not known, but there is general agreement, amongst archaeologists at least, that it is these island groups that provide the most likely candidates. For discussion see Kirch, *On the Road of the Winds*, 277-78. Genetic analysis of kiore (the ‘Polynesian’ rat, *Rattus exulans*) identifies the Cook and Society Islands populations as the closest relatives to New Zealand. See Howe, *The Quest for Origins*, 178. The timing of Polynesian colonisation of Eastern Polynesia – and from there the extension to fringing landmasses such as Hawaii, Easter Island and New Zealand – remains controversial. Not only are the dates of settlement at issue but the sorts of evidence that can be used to adduce such dates. Some, such as Atholl Anderson, argue that artefactual evidence is necessary to establish settlement; others, such as Patrick Kirch, accept a broader range of evidence, including paleoenvironmental indicators (increases in charcoal for example) or the presence of commensal species such as the Pacific rat. Their conclusions are rather different. Their models largely agree on the timing of the colonisation of Western Polynesia (about 900 BC), but whereas Kirch holds that movement into Eastern Polynesia was certainly underway by 1 AD, and probably earlier, Anderson argues that revised carbon dates indicate that ‘[g]ive or take a century, the advent of humans can be said with some confidence to have occurred about 900 BC in West Polynesia, about 900 AD in East Polynesia, and about 1200 AD in mainland New Zealand’. See Denoon et al., eds., *The Cambridge History of the Pacific Islanders*, 64; Anderson, "Retrievable Time: Prehistoric colonisation of South Polynesia from the Outside in and the inside out’", 37; Kirch, *On the Road of the Winds*, 230-45.

Pacific Ocean. They kept pigs, fowl, and dogs, and cultivated eleven tree and eight root crops, including taro, breadfruit, yams, bananas and coconuts.\textsuperscript{48} As they colonised new islands, they transported their animals and plants with them; this 'portmanteau biota' was critical to the eastward spread of settlement, for few edible tubers or fruits were naturally available in the tropical Pacific.\textsuperscript{49}

The relationship between social structure, political organisation, and Pacific environments is clearly expressed in the systems of land tenure.\textsuperscript{50} Many Pacific islands groups are high volcanic islands, for example, the Cooks, Societies, Marquesas, Australs and elsewhere. Potential resources are thus distributed more or less concentrically: fertile valleys, coastal flats, the littoral, lagoons, and open sea fisheries radiate outwards from a central high point. Polynesian societies on such islands typically allocated primary territories into pie-slices, or wedges, radiating out from that high point, each the exclusive preserve of a different kin group. Each community thereby controlled a discrete and clearly bounded territory that provided undisputed access to the full range of island and ocean resources.\textsuperscript{51}

Polynesians profoundly transformed the lands they colonised.\textsuperscript{52} They fired forest on flat coastal fringes and in valleys for intensive cultivation and tree plantations. The rapid growth of tropical plants mitigated, but could not always prevent, subsequent erosion. Habitat loss and hunting rapidly destroyed much of the original flora and fauna of the Pacific Islands.\textsuperscript{53} Sea bird numbers were perhaps 100 to 1,000 times greater than those of today, while in all 9,000 species of birds are thought to have inhabited Oceania before Polynesian dispersal, a greater variety than the entire world sustains today.\textsuperscript{54}

\textsuperscript{48} King, \textit{The Penguin History of New Zealand}, 63.
\textsuperscript{49} Kirch, \textit{On the Road of the Winds}, 54.
\textsuperscript{50} For discussion of various Pacific island property systems see Ron Crocombe, ed., \textit{Land Tenure in the Pacific} (Suva: University of the South Pacific, 1987).
\textsuperscript{51} Atholl Anderson, "Kin and Border: Traditional Land Boundaries in Eastern Polynesia and New Zealand with Particular Reference to the Northern Boundary of Ngai Tahu (Wai 785)," (2003), 28-41.
\textsuperscript{52} Atholl Anderson, "Faunal Collapse, Landscape Change and Settlement History in Remote Oceania," \textit{World Archaeology} 33, no. 3 (2002).
\textsuperscript{54} Ibid., 70; Darby et al., eds., \textit{The Natural History of Southern New Zealand}, 131; Young, \textit{Our Islands, Our Selves}, 38.
The rapid destruction of the life on successive islands certainly presented Polynesians with problems. But this does not wholly explain why people chose migration as their solution, for overall, in most cases, Polynesians would have evaluated the ways they transformed island environments positively; sea birds might have dwindled, but from the Polynesian's perspective, these changes largely amounted, as archaeologist Patrick Kirch argues, to 'a highly desirable series of modifications, improvements and innovations that quite literally made the places inhabitable. For indeed, oceanic islands – despite their famously salubrious climates, lack of disease-inducing organisms, and physical beauty – were not naturally well suited to supporting large human populations.'

Polynesian peoples therefore had to be drawn to embark on these astonishing voyages just as much as they were pushed. As Kirch puts it, 'these voyages were primarily means to an end: the discovery of new landscapes that could be claimed, named, divided, planted, and inherited.' This is perhaps most clearly indicated by the choice to sail south and west towards New Zealand across unknown seas, with the winds at the explorers' backs. This reversed the tried and true strategy of exploring into the wind to guarantee a short downwind voyage home to safety that had long shaped Polynesian migrations east across the Pacific. Reaching south towards New Zealand was probably a voyage of no return.

The environment of New Zealand, especially in the south where the Otago Peninsula lies, was also very different from that to which Polynesians were accustomed. Climatic constraints required radical alterations in the strategies and structures by which Polynesians organised their individual and communal lives. Here they could grow none of the crops that had sustained them as they spread out across the Pacific. They had to subsist entirely on what they had found. In doing so, they immediately began to change, not only their own ways of life, especially the modes of land tenure

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58 Anderson, "Retrievable Time: Prehistoric colonisation of South Polynesia from the Outside in and the inside out ", 35-37.
which they had developed in the Pacific, but also the new environment within which they were learning to survive.\(^{59}\)

So in attempting to situate the moment of the meeting of these intrepid people and this bountiful land we begin to identify and describe the changing patterns of relationships between people and their environment on the Otago Peninsula: the central task of this thesis. Four basic questions are pursued throughout. First, what elements of the Peninsula environment have people sought and used to maintain and reproduce their communities? Second, what systems of property and tenure to resources have emerged to structure interaction with the environment? Third, how has this interaction altered elements of this environment? Fourth, how has environmental change influenced different people's beliefs about and behaviours towards their environment? The thesis is therefore grounded in tracing the ongoing dialectical changes in people's behaviour and in the Peninsula's environments: as people shaped this place, however inadvertently, they were themselves changed, and came to exert another set of influences upon the Peninsula. In the process of constructing the ecology and landscape of the Peninsula, Polynesians have become Maori, and Europeans Pakeha.

Chapter Three

Arrival and Adaptation

E hine, e kimi ana i te huaki pouri
Kia puta mai koe ki te whariki tapu
I horahia ra e Kahukura, e Tu Te Rakiwhanoa.

Whakaroko mai ki ka taki
O te whenua e neneke ana
Te roa hoki i matata ka haehaetaka
Ka karaka atu to iwi ki a koe, e Hine
Whakamaurutia te mamae o roto nei

Ka whanau mai ki te tatau pounamu
I waihakatia e o tupuna
Hei turaka mohou i te ao tu nei.

E Hine, seek the opening of the womb
so that you may ascend onto the sacred mat
that has been lain by Kahukura and Tu Te Rakiwhanoa

Listen to the cries
of the shaking land
So long have the open wounds been gaping
Your people are calling to you
Soothe the pain we feel

You are born onto the tatau pounamu
shaped by your ancestors
as a standing place for you in the new world

3.1 Introduction: the arrival of Maori

Who were the first people of Muaupoko, the Otago Peninsula?\(^1\) Michael King reminds us that such questions are difficult to answer, because the sources of information about the people who began to live here are very different in form and content:

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\(^1\) Jim Williams, "E Paakahi Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu" (PhD Dissertation, University of Otago, 2004), 21.
Who were the people of this era? That is a difficult, if not impossible question to answer historically. Maori whakapapa offer names without remains—that is, stories without evidence—while archaeology offers remains without names—evidence without stories.²

The evidence of archaeology is found stratified in the land; it often consists simply of what people discarded as rubbish. Maori have passed their histories from mind to mind. Their communities thereby retained detailed records from the distant past only of what was crucial to their identity and survival—the names of their ancestors, and of the places on the land, often named in memory of those ancestors, from which they gained what was needed to sustain their lives, and fulfil their desires. Crucially, they present fundamentally different modes of explanation: archaeology tends to argue people’s behaviour is ultimately governed by material causes; Maori, like all people, prefer to believe their lives are shaped by their ideals and values. Such inherent difficulties have been exacerbated by both the very crude ways archaeology was long pursued on the Peninsula, and the overlaying and mingling of Maori histories through the successive waves of settlement of different people here.

Perhaps, therefore, it is impossible to say who the early people of the Peninsula were: it is certainly difficult, and much will forever remain uncertain. Neither archaeology nor Maori tradition offers more than fragments of information, and it is not wise to try and weave their threads of evidence and argument into a tight chronological narrative. However, neither can we afford to ignore any source of information, for using any one discipline in isolation generates insoluble difficulties. Helen Leach and Jill Hamel succinctly explain why this is the case for archaeology here:

> The question of local adaptations by an intrusive group is a fundamental one. No amount of comparative study of present artefact collections or of sparse faunal assemblages will clarify the situation, because it involves single interlocking segments of a single system of human behaviour.³

Therefore both Maori understandings of settlement and archaeological evidence are considered here to see what each may tell us about early interaction with the Peninsula environment, but initially they are treated separately to allow each to tell its

story without interruption. I then discuss how the information each provides may be complementary or contradictory. I begin with how Maori tradition depicts the making of these lands, their Polynesian ancestors’ arrival, and the settlement of the Otago Peninsula.4

Southern Maori traditions contain a number of explanations for the forming of these lands and their peopling. Each wave of settlement generated migration traditions that, as the peoples mingled, often became similarly enmeshed. Of the three broad descent groups within which southern Maori continue to whakapapa (trace descent), Waitaha, Kati Mamoe and Kai Tahu, Waitaha were the earliest arrivals.5 It is their names that the land first bore, and their mana (in this sense, authority or spiritual power) that anchors the presence of people here: every major landmark in the South Island has a Waitaha name.6

In Waitaha tradition the South Island is Te Waka a Aoraki, the wrecked canoe of Ao-raki, first born of Rakinui and Poharua-o-Te-Po, who had come to see Papatuanuku, his father’s new wife.7 Ao-raki and his brothers became South Island landmarks.8 Then their descendents sought them, and in the process contoured the land.9 Aoraki’s mokopuna (grandson) Tu Te Rakiwhanoa reshaped the wreckage to help make the land suitable for human habitation, thrusting Ka Mawheranui o Nga Kuwha, a passage for the Grey River through to the sea, and chopping out the fiords with his adze Te Hamo.10 Tu Te Rakiwhanoa had helpers; one such was the atua, Kahukura, who shaped the coastline of Otago, eating out Otago Harbour, and throwing up the

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4 Though it is highly anachronistic, being a term not adopted until after the arrival of Pakeha, this thesis where necessary uses the generic term ‘Maori’ to refer to the Polynesian people who settled New Zealand. This avoids clumsy constructions such as ‘the Polynesian ancestors of Maori’ and so forth. A more specific term, ‘Southern Maori’ is often used, by which nothing more is meant than a geographic distinction.

5 This text is a local Otago history; it therefore uses the appropriate southern dialectical forms Kati Mamoe and Kai Tahu rather than the standardised Maori forms Ngati Mamoe and Ngai Tahu. See Bill Dacker, Te Maemae Me Te Aroha (Dunedin: University of Otago Press, 1994), 4.


9 Williams, E Paakahi Hakinga a Kai, 19-20.

earth to either side to form the hills of the Otago Peninsula and the western shore. He then clothed the bare land with forests, and stocked them with animals. The Kai Tahu kaumatua (elder) Tikao explained something of this atua, or ancestral spirit:

After the main beginning of the world and when people began to spread out, Kahukura became the main god of the migrators. He separated the good from the bad weather; he protected the frail canoes on the heaving waves; he sent fair winds to waft the canoes over favourable seas; he assisted them with rainbows, which showed the canoe-men their directions. The venturesome navigators regarded Kahukura with respect and gratitude, for his sign in the sky pointed the road into unknown seas.

Maori in Otago continued to identify Kahukura as one of their principal deities in the nineteenth century; when de Blosseville recorded southern Maori beliefs in the early

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11 Michael Stevens, "The Names Are in the Land, Our History Is in the Land" (B.A. Dissertation, University of Otago, 1976), 19-20. Stevens adds that Kahukura also created the Taieri River, and upon dying became Saddle Hill. George C. Thomson recorded another variation, in which a chief of Rápuwai captured a taniwha on Maungatua, and bound him, and his tohunga forced the taniwha to labour for them. The taniwha initially broke free of the spell, and struggled to escape. His thrashing rolled out the Taieri Plain, and his bleeding formed Lake Waihola and the Taieri River. Recaptured, he was made to dig out Otago harbour, throwing the earth up to either side to form the surrounding hills. The taniwha was then allowed to return home, but died, forming Saddle Hill. See G. C. Thomson, "Papers on Southern Maori History," (Dunedin: Hocken Library, n.d.). However, this narrative is probably confused, since the creation of the Taieri Plain and river is more often associated with the taniwha Matamata, and linked to the Kati Mamoe chief Te Rakituaneke. See for example Sharron Brey, Graeme Thomas, and Victor MacGill, Under the Eye of the Saddle Hill Taniwha (Dunedin: Nga Tutukitanga o Taieri, n.d.), 15.


13 Herries Beattie, Tikao Talks (Auckland: Penguin Books, 1990), 41, Herries Beattie, Traditional Lifeways of the Southern Maori, ed. Atholl Anderson (Dunedin: University of Otago Press, 1994), 401. Kahukura does not figure at all prominently in the traditional Maori pantheon of Gods. Yet, according to Tikao Kahukura ‘is very high in Gaitahu (Ngaitahu) estimation generally. We do not all claim him as an especial god, but certainly some of our principal hapu (families) do’ (note the use of the southern Maori guttural ‘g’) Beattie, Tikao Talks, 41. In fact, Walter Mantell, who recorded considerable traditional information from Kai Tahu in the 1840s and 1850s, felt that the correct name for the southern Maori iwi was actually Ngati Kahukura, and that Kai Tahu was really only one of the hapu. See Bill Dacker, "He Raraka a Ka Awa," (Hocken Library, 2000), 21, fn3. This is clearly exaggerated (Shortland recorded ‘Katikahukura’ as only one of six hapu at Waiauteruati), but shows something of the importance of this figure. James Cowan recorded that ‘Kahukura was the great deity or tribal guardian of Ngai Tahu and a carved and tattooed wooden image of the god was kept by the priests in all the pas and was always invoked in time of war.’ Kahukura was certainly the deity guarding Te Wera’s pa at Huriawa, and the tuahu, or shrine, in which a carved image of Kahukura was kept figures prominently in the traditions surrounding the siege of that pa by Taoka. James Cowan, "The Life and Wars of Te Wera," Otago Daily Times 1906. He was not however the principal god of the Karetai family, which suggests Kahukura may have had an especially Kai Tahu, as opposed to Kati Mamoe, association. The atua of Karetai’s family was Rakaiora, about whom Tikao knew nothing. De Blosseville recorded that whereas Kahukura controlled the day, this atua (recorded as ‘Rockiola’, identified as Rakaiora by Tikao, was the ‘[s]pirit of night, the cause of death, of diseases and all the accidents which may happen during the hours of his reign’. See Robert McNab, Murihiku and the Southern Islands (Invercargill: William Smith, 1907), 216; Beattie, Traditional Lifeways of the Southern Maori, 559.
1820s, he stressed the importance of ‘Kowkoula’, who ‘governs the world during the day from the rising of the sun until its setting.’

Though he too performed superhuman feats, Rakaihautu is the first plausibly historical person in southern Maori traditions; he is also celebrated in Tongan history. This chief arrived here from the first land named in southern tradition, Te Patunuioaio, aboard the canoe Uruao (meaning squall in southern Maori), crewed by members of the Kahui Tipua, Kahua Roko and Waitaha peoples. Yet, though some say the name Waitaha was used in the time of Rakaihautu, it seems likely that, like Kai Tahu and Kati Mamoe, Waitaha is a name adopted by formerly disparate groups who came to whakapapa from an eponymous ancestor, Waitaha, who lived some 12 to 15 generations after Rakaihautu. According to Mataiha Tiremorehu, the first Kai Tahu to impart such information to Europeans, the earliest people were first called Te Rapuwai, and they are sometimes connected to Nga Puhi and the Taranaki area. Their numbers were great, even on the mountains, and they made the land open.

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14 Quotation from de Blosseville in McNab, *Murihiku and the Southern Islands*, 216. For identification as Kahukura see Beattie, *Traditional Lifeways of the Southern Maori*, 556. The southern Maori use of ‘1’ has typically become lost in the standardisation of Maori, and has usually been rendered as ‘r’. In fact, Walter Mantell, who recorded considerable traditional information from Kai Tahu in the 1840s and 1850s, felt that the correct name for the southern Maori iwi was actually Ngati Kahukura, and that Kai Tahu was really only one of the hapu. See Dacker, *"He Raraka a Ka Awa,“* 21, fn3. This is clearly exaggerated (Shortland recorded ‘Kaikahukura’ as only one of six hapu at the settlement Waiateruati), but shows something of the importance of this figure.


16 The relationship between these groups varies in different accounts, especially those derived from such questionable authorities as the Reverend James Stack or W.A. Taylor. I have recounted the traditions largely as given by Herries Beattie and Te Maire Tau, between whom there is generally substantial agreement. Beattie states that the Kahui Roko people were left behind midway through the voyage to New Zealand. It should be noted that the Kahui Tipua have been regarded as a mythical predecessor to Waitaha. See Herries Beattie, *Moriori: The Morioris of the South Island* (Christchurch: Cadsonbury Publications, 1993), 27; Tau, *Nga Pikituroa O Ngai Tahu: The Oral Traditions of Ngai Tahu*, 270; Herries Beattie, *Traditions and Legends of the South Island Maori* (Christchurch: Cadsonbury Publications, 2004), 13.


18 Ibid., 18, Williams, E Paakahi Hakinga a Kai, 38. Beattie recorded that all of his informants were of the opinion that Te Rapuwai were the first people. See Herries Beattie, “Southern Maoris,” (Dunedin: Hocken Library, n.d.), 10. Yet Te Rapuwai are somewhat mysterious. Their identity and placement in the settlement sequence are unclear. Though Tiremorehu named them Te Aitanga o Rapuwai – the descendants of Rapuwai – according to some authorities Rapuwai is not the name of an ancestor (according to Beattie the name means ‘clawing water’, and stems from their practice of swimming with elbows tucked in). Herries Beattie, *Maori Place Names of Otago* (Dunedin: Otago Daily Times and Witness Newspapers Co., 1944), 42. Anderson provides a whakapapa in which the progenitor of Rapuwai is Puhirere, six generations after Rakaihautu, and four before Waitaha-nui, the same line of descent. See Anderson, *The Welcome of Strangers*, 18-19. Tau argues such limited Rapuwai whakapapa as he believes is extant identifies them very closely with the Ngati Wairaki people who controlled the West Coast of this island prior to the incursion of Ngai Tahu. See Tau, *Nga Pikituroa O Ngai Tahu: The Oral Traditions of Ngai Tahu*, 159-82, Beattie, *Moriori: The Morioris of the South
In any event, tradition is emphatic on this, the crucial point: after first landing in the North Island, and finding the land occupied, Waitaha tradition states that:

Rakaihautu carried on his journey to the other island. There were no people on this Island. Rakaihautu was the man who lit the fires of occupation on this Island.

Tradition teaches that Rakaihautu and his people found that all of the land was forested. Rakaihautu travelled south on foot, exploring the land’s resources, and using his ko, or digging stick, to delve out the larger lakes of this island, and its fiords, while his son Rakihouia sailed down the east coast investigating the resources of the sea and shore. Rakaihautu and his son Rakihouia named many features on the land, where for example eels might be caught, or birds’ eggs collected; many significant places throughout the South Island were also afterwards named for the people aboard the Uruao. Tukete, the tohuka or priest aboard the Uruao, ritually cooked and ate of its foods (a weka); he thereby lifted the tapu from the land, which hitherto ‘had not

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19 Though Tau has the traditional initial landing at Nelson. Tau, Nga Pikituroa O Ngai Tahu: The Oral Traditions of Ngai Tahu, 159-82.
20 Ibid., 271.
22 Herries Beattie gives the rather more prosaic explanation that Rakaihautu used his ko or digging stick to test the quality of the soil as he travelled; this, coupled with the fact that he was particularly associated with the discovery of so many lakes, led to the tradition that he had actually brought the lakes into being. See Beattie, Moriori: The Morioris of the South Island, 31.
23 Anderson, The Welcome of Strangers, 14, Beattie, Moriori: The Morioris of the South Island. According to Beattie, Rakaihautu and his people constructed eel weirs and dammed creeks to catch eels and lamprey in their annual migrations. However, eel bones are rather rare in early sites. Though some have concluded their absence is due to the decay of such bones, Foss Leach has recently noted that this conclusion is not warranted; he argues, contra traditions such as these, that the lack of eel bones in archaeological sites is evidence of an early aversion to eels as still found in some Pacific islands today. Foss Leach, Fishing in Pre-European New Zealand, New Zealand Journal of Archaeology Special Publication: Archaeofauna Vol. 15 (Wellington: New Zealand Journal of Archaeology 2006), 186-88.
been properly secured but was like the drifting flotsam on the sea'. In this way, the newly arrived people gained the rightful tenure to the resources of this vast and strange land.

Waitaha whakapapa, or genealogy, stems from Rakaihautu, and it is ultimately through Waitaha that all Kai Tahu can claim to be the mana whenua—the people of this land. This is because Rakaihautu 'lit the fires of occupation' here, and named the land. Naming places was critical to claiming rights of tenure and use of their resources; as Anderson puts it:

rights were held by reference to who gave them... Traditional property business was thus a 'name-game' and so must be the analysis of its history. The history of settlement and land rights is pre-eminently the history of events linked to genealogy.

Therefore, as Edward Shortland, first European to record the traditions of Kai Tahu realised, '[w]ith the New Zealander, genealogical questions are inseparable from investigations of claims to land.' Because of its critical importance for allocating and legitimating rights to occupy land, for taking resources, and as the dominant determinant of social status, whakapapa was the primary form of recording the past in traditional history—the backbone. Incidents that might be used to construct narratives were secondary, and attached to whakapapa. Therefore without supporting whakapapa a tradition lacks credibility.

Using whakapapa, Kai Tahu historian Rawiri Te Maire Tau estimates the arrival of the Uruao at about 44 generations ago (a figure arrived at by comparing several whakapapa, most of which list 42 to 44 generations, though a few are somewhat longer). Obviously, measuring time in generations can only provide very rough...
figures, but if, say, each generation represents around 20 years, then these whakapapa, conservatively interpreted, suggest initial colonisation occurred via the Uruao about 1050 to 1100 AD.\textsuperscript{31}

The critical importance of whakapapa has troubling implications for how to regard traditions surrounding the famous Araiteuru, the next waka that features in southern Maori tradition. Tradition has it the Kahui Tipua people sent this canoe back to the ancestral land, Hawaiki, after meeting Rokoitua, who had arrived from Hawaiki. He had declined their offerings of fern pith, kauru (a product of \textit{Cordyline australis}, the cabbage tree), and kiekie, and offered kumara in return. After tasting his kumara the Kahui Tipua sent the Araiteuru to retrieve this food. Rokoitua is claimed as the ancestor of the genealogical line that leads, after six generations, to Hotu Mamoe, founder of Kati Mamoe.\textsuperscript{32}

The Araiteuru returned bringing kumara to New Zealand and was blown down the east coast of New Zealand before eventually being wrecked at Matakaea (Shag Point). Many of the Maori place names of Otago, including several bestowed on the Otago Peninsula, commemorate the passage of this canoe – its kumara kits washed overboard at Moeraki to become boulders, its crew transformed into landmarks after failing to return to the canoe before daylight.\textsuperscript{33} The coast of Otago is sometimes referred to as Te Tai o Arai Te Uru.\textsuperscript{34} Because of the paucity of whakapapa stemming from this canoe, Tau argues the Araiteuru traditions are best regarded as mythical

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\textsuperscript{31}Beattie, "Traditions and Legends Collected from the Natives of Murihiku (Southland, New Zealand) Part VIII," \textit{Journal of the Polynesian Society} 27, no. 107 (1918): 147.\textsuperscript{32}Anderson, \textit{The Welcome of Strangers}, 219; Te Maire Tau, "Kurakura Ngai Tahu" (MA Dissertation, University of Canterbury, 1995), 37; Beattie, \textit{Moriori: The Morioris of the South Island}, 67. This assumes a mean generation length of twenty years, a somewhat shorter length than that used by older commentators, but in line with more recent analyses such as Atholl Anderson’s. The validity of this method has been questioned in other contexts, particularly as used by Percy Smith when promoting the Kupe-Toi-Greet Fleet colonisation sequence. See D.R. Simmons, "A New Zealand Myth: Kupe, Toi, and the 'Fleet','' \textit{New Zealand Journal of History} 3, no. 1 (1969). Kerry Howe also highlights problems with such a method, arguing that names in a whakapapa may represent a period of rule, rather than a generation, and that descent may pass between brothers, or in other ways than from father to son. K.R. Howe, \textit{The Quest for Origins}, 2nd ed. (Auckland: Penguin Books, 2008), 162-64. Howe’s latter point is quite true, but can be often accommodated by comparing several whakapapa; the former point is dubious. Jim Williams, Pers Comm. 20 March 2008.\textsuperscript{33}Anderson, \textit{The Welcome of Strangers}, 15.\textsuperscript{34}Atholl Anderson, \textit{When All the Moa-Ovens Grew Cold} (Dunedin: Otago Heritage Books, 1983), 7; Anderson, \textit{The Welcome of Strangers}, 14-16.\textsuperscript{35}Anderson, \textit{The Welcome of Strangers}, 14-16.
\end{flushright}
explanations for how and why people brought kumara to New Zealand – though not of course to the frosty far south – rather than as true migratory traditions.\textsuperscript{35}

The last of the voyages from Hawaiki recounted in southern traditions was made by the waka Takitimu under its captain Tamatea, which travelled south down the east coast, and was wrecked by enormous waves (represented in the landscape by the mountain Maungatua), becoming the Takitimu mountains of Southland.\textsuperscript{36} In the south this canoe is particularly associated with the Kati Mamoe, but is also very prominent in the histories of many tribes in the North Island, and features too in the traditions of the Pacific. From this time forth, tradition states the peoples of New Zealand had no contact with their former homelands elsewhere in the Pacific.\textsuperscript{37}

Rakaihautu’s descendents probably established their principal headquarters at Akaroa on Horomaka, Banks Peninsula, but it has also been said that they based themselves primarily on the Canterbury Plains, in the vicinity of the present towns of Stoke, Oxford and Cust, where they luxuriated in the variety and abundance of foods, and became ‘the great number of Waitaha’, spreading along the coasts as their numbers increased, and soon settling Otago Peninsula.\textsuperscript{38}

Maori traditions omit far more than they include. They provide, for example, almost no sense of the environmental contexts in which they occurred.\textsuperscript{39} Though they indicate where Waitaha lived – largely on the coast, and usually at the mouths of large rivers, whose waterways provided access inland – there are only a very few fragments of tradition about how the Waitaha lived upon this island.

\textsuperscript{35} Tau, Nga Pikituroa O Ngai Tahu: The Oral Traditions of Ngai Tahu, 177-78; Beattie, Traditions and Legends of the South Island Maori, 81.
\textsuperscript{36} Jeff Evans, Nga Waka O Nehera: The First Voyaging Canoes (Auckland: Reed Books, 1997), 153-70; Beattie, Moriori: The Morioris of the South Island, 40.
\textsuperscript{38} Beattie, Moriori: The Morioris of the South Island, 27-31.
\textsuperscript{39} Anderson, "Kin and Border: Traditional Land Boundaries in Eastern Polynesia and New Zealand with Particular Reference to the Northern Boundary of Ngai Tahu (Wai 785)," 18.
Rakaihautu is said to have encountered large numbers of moa.\textsuperscript{40} The important early twentieth century ethnographer Berries Beattie felt the Waitaha coexisted with the moa until the arrival of Kati Mamoe, and summarised the information he had gathered about why they disappeared thus:

\begin{quote}
Tradition says a great flood in several of the principal rivers drowned many moas, and fires unwisely lighted in various parts got out of hand and burnt great areas of fern, bush, and scrub, causing the destruction of many wingless birds. These causes, with the additional incentive that the newcomers [Kati Mamoe] instituted the practice of augmenting their food supply with the moa eggs, led the bird to gradually vanish in all easily accessible areas.\textsuperscript{41}
\end{quote}

This passage indicates something of the problems Maori faced in adapting to the climate and environment of southern New Zealand. Transferring slash and burn agricultural practices from the tropics to the temperate and seasonal climate of southern New Zealand, where forest regeneration was much slower, had unintended and irreversible consequences.\textsuperscript{42} Without agricultural crops, the settlers had to make rapid adjustments to the naturally occurring resources that they found here. The nature and placement of Waitaha names in the landscape provide clues as to which elements of the environment were important, and where they were found. Their names clearly indicate, for example, that fish, eels, and sea birds were significant and familiar foods.\textsuperscript{43} Tradition also indicates the significance of, and adaptation to, foods they had found; thus Waitaha were traditionally said to have brought critical foods such as ti, aruhe (bracken fern, \textit{Pteridium esculentum}), and mamaku (tree fern), kakapo, weka and kiwi with them.\textsuperscript{44} Lessons on how to best find and capture these new resources had to be learnt by each group arriving in the south. Moa, like many of New Zealand's birds, are very long-lived but breed extremely slowly. Their small populations could not endure human predation of both adults and eggs.\textsuperscript{45}

\textsuperscript{40} Beattie, \textit{Moriori: The Morioris of the South Island}, 49-50. Beattie's informants did not use the name 'moa', rather 'manu-nui' (big bird) as the generic name, with 'kiwi-nui' as the smaller species, and poua' (old man)' or poua-kai' (old glutton), for the larger species.
\textsuperscript{41} Ibid., 52.
\textsuperscript{42} O'Regan, "Ngai Tahu and the Crown: Partnership Promised," 7.
\textsuperscript{43} Anderson, \textit{The Welcome a/Strangers}, 13-14.
\textsuperscript{44} Ibid., 16, Beattie, \textit{Traditions and Legends of the South Island Maori}, 117.
\textsuperscript{45} The definitive work on moa is T.H. Worthy and R.N. Holdaway, \textit{The Lost World of the Moa} (Christchurch: Canterbury University Press, 2002). I provide more detailed discussion of Maori and moa interaction at sections 3.4 to 3.6.
3.2 Settlement of the Otago Peninsula

The Otago Peninsula does not figure in the earliest extant settlement traditions. Herries Beattie, who recorded a great deal of traditional information gathered from Maori in the south in the early twentieth century (but who somewhat neglected the Otago Peninsula) summarised the paucity of early tradition succinctly:

The Peninsula does not seem to be mentioned in traditions relative to the discovery of New Zealand by Maui; nor in the story of Rakaihautu’s explorations [although Kaikarae (Kaikorai) is]; nor in the legends that have gathered around Arai- te- uru – (although Dunedin Town Belt is); nor in the few details we have of Waitaha or Katimamoe occupation, (although we know it was occupied by first one and then the other of those tribes for centuries). 46

However Beattie did not devote much time to the Peninsula, and there are fragments of information about early settlement. The southern Maori name for the Otago Peninsula is Muaupoko – ‘the front of the head’. 47 The name Muaupoko reflects an association with the complementary name Murihiku, ‘behind the tail’ of the fish of Maui, the name Maori gave to the south of the island (now roughly the provinces of Otago and Southland). 48 This suggests that at some point the Peninsula became a socially or politically significant geographical boundary. 49 But a general difficulty in discussing these names is ascertaining when they came into usage. In this case,
according to Paora Taki, an informant of Herries Beattie, Murihiku was a comparatively recently bestowed name.\textsuperscript{50}

A very few of the more than one hundred recorded Maori place names on the Peninsula may have been those originally bestowed by the earliest peoples. If Rakaihautu bestowed any names on the Peninsula, they have not survived (though as Beattie points out names nearby have: Kaikarae, the mouth of the Kaikorai stream, commemorates his eating of seabirds there),\textsuperscript{51} yet some names derive from the Rapuwai; there is a place called Te Rapuwai or Rapuwai, on the western side of the Heads, perhaps referring to the founder of that group,\textsuperscript{52} and believed to be an urupa, or burial ground.\textsuperscript{53} Taupo, a place in the lee of Harrington Point, is also a Rapuwai whakapapa name.\textsuperscript{54} Several names, of more dubious validity, relate to the voyage of the Araiteuru canoe.\textsuperscript{55} Pukekura, ‘Red Hill’, which became the name for the pa on Taiaroa Head\textsuperscript{56}, may be a very old name; it is mentioned in a song or waiata as a place where Kupe shortened sail on his canoe as he took shelter.\textsuperscript{57}

According to Beattie’s informants, Otakou is another very old name brought from Hawaiki, and first bestowed on the tidal current that still enters the Otago Harbour.\textsuperscript{58} This is still the meaning given by local Maori today, who vigorously and unanimously deny that it means ‘place of red ochre’, as has elsewhere been claimed.\textsuperscript{59}

\begin{itemize}
  \item \textsuperscript{50} According to Taki, Murihiku was ‘quite recently bestowed, and was, for example, not nearly so old a name as Rakiaura. Beattie, \textit{Traditional Lifeways of the Southern Maori}, 444.
  \item \textsuperscript{51} Stevens, "The Names Are in the Land, Our History Is in the Land ", 7.
  \item \textsuperscript{52} Ibid. Though as noted above the founding ancestor is usually given as Puhirere, while Tau disputes that there was a founding ancestor. See Tau, \textit{Nga Pikituara O Ngai Tahu: The Oral Traditions of Ngai Tahu}, 177.
  \item \textsuperscript{53} Stevens, "The Names Are in the Land, Our History Is in the Land ", 24.
  \item \textsuperscript{54} Ibid.
  \item \textsuperscript{55} Ibid., 20, Beattie, \textit{Maori Place Names of Otago}.
  \item \textsuperscript{56} Taiaroa Head was not a Maori name, but a European appellation of the nineteenth century. Matenga Taiaroa did not live at Otakou until after 1848.
  \item \textsuperscript{57} Beattie, \textit{Maori Place Names of Otago}, 43, Stevens, "The Names Are in the Land, Our History Is in the Land ", 17.
  \item \textsuperscript{58} Beattie, \textit{Maori Place Names of Otago}, 44; Beattie, \textit{Tikao Talks}, 52. The name Otakou has generated considerable debate. It is first recorded in a lament sung in Maori before Cook’s surgeon David Samwell in 1777. Then it was recorded as ‘Otagoo’. Early printed references in 1815 and 1826 used ‘Otago’. ‘Otakou’ does not appear in print until the 1840s. See Peter Entwisle, \textit{Behold the Moon: European Occupation of the Dunedin District 1770-1848} (Dunedin: Port Daniel Press, 1998), 136-39. According to Jim Williams and Khiyla Russell, the name Aramoana, ‘Pathway to the Sea’, now the name for the township on the western shore of the harbour mouth, was likewise originally bestowed on another tidal current that exited the harbour, now blocked by sand, and the development of the harbour mole.
  \item \textsuperscript{59} A. W. Reed, \textit{The Reed Dictionary of New Zealand Place Names} (Auckland: Reed Books, 2002), 370.
\end{itemize}
became the name for the principal focus of settlement on the Peninsula backing off the string of beaches running up the harbour from beneath Pukekura. From here the Otakou communities eventually came to control a much larger rohe, or domain, and this too was generally known as Otakou.  

3.3 Receiving the teaching of tradition

Historical traditions are not historical texts, and historians cannot simply use them as such. They rather served (and still serve) specific purposes, principally to substantiate political claims to seniority of descent or legitimate ancestral claims to resources. To reiterate: historical traditions are primarily elaborations of whakapapa, and only secondarily about events tied to whakapapa. The overarching principle of interpreting tradition is, therefore, 'that whakapapa can be tested independently of narrative, but narrative which is independent of whakapapa has lost both its traditional basis and its only reliable means of authentication.'

Moreover, weaving evidence from Maori tradition into historical narratives is legitimate only when it is realized that: 'oral traditions do not attempt to record an event. Instead, the story-teller attempts to make the event march to the beat of the timeless myth.' In other words, even tales told of the relatively recent past are structured by myths of old; only then did they make sense to their listeners. The teller interpolated traditional imagery from myth into historical events, which became saturated with spiritual metaphors and symbols reflecting the values and beliefs of the listeners. Thus, 'when one reads an oral tradition that occurs within the realm of history, one should be looking for formulaic expressions, themes, symbols, metaphors and structures of myth that deify an ancestor.' The point can be illustrated by considering that while Maori came to agree that Maui hauled the North Island, Te Ika a Maui, out of the ocean from his canoe Te Waka a Maui, the South Island, Maui is the mythic personification of human discovery and the wresting of knowledge from

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60 Jim Williams distinguishes between a takiwa, in this sense a fairly precisely bounded geopolitical district, and a rohe, the more loosely defined territory of a particular group. Murihiku is an example of a takiwa. See Williams, E Paakahi Hakinga a Kai, 45-46.
61 Anderson, "Kin and Border: Traditional Land Boundaries in Eastern Polynesia and New Zealand with Particular Reference to the Northern Boundary of Ngai Tahu (Wai 785)," 23.
63 Ibid., 85.
64 Ibid., 87.
the gods throughout Polynesia. So he is regarded as the first to 'find' and create New Zealand because the structure of myth allows of no other explanation.

Similarly, names of crucial ancestors and canoes were often transferred with their descendents far from the places where they first became significant, for '[n]ot only is there a tradition of migrations, there is also a migration of traditions.'65 This was probably the case with many of the Araiteuru names bestowed on the Peninsula and its surrounds (Aoraki, for example, is given as a name for the headland at the eastern end of Purakaunui Bay).66 Name changes might have been frequent here, where successive groups fought fiercely for control of the landscape.

Very early traditions of discovery, and the origins of things, are obviously the least reliable historical accounts. The figures they depict typically perform superhuman feats, and at the end of their lives the traditions merge them into the landscape, as explanations for the shapes and characteristics of particular places and, most importantly, as part of the process of claiming the land as the territory of their descendents. Regardless of their veracity as historical accounts, however, the traditions of origin and the bestowal of early names made the shape of the land meaningful for southern Maori. These explanations emphasised what was crucial to the people that had come here: for example, the dangers of the sea, the problems caused by the impossibility of growing kumara, the distribution of familiar foods such as eel and sea-birds.67

Yet Maori tradition cannot and should not be dismissed as historical evidence. Whakapapa, in particular, was so politically and economically significant that its accuracy was of critical importance to Maori.68 Edward Shortland, who visited most of the major Maori communities in the south in 1843, was 'so struck with the remarkable manner in which they coincided with each other, often when least

65 Russell, "Landscape Perceptions of Kai Tahu", 28; Beattie, Traditions and Legends of the South Island Maori, 135. Beattie notes that the first canoes made in Polynesian tradition are also those that bore the first settlers to New Zealand. This is an example of how, if history were to survive in a purely oral culture, it had to be adapted to pre-existing mythic structures.
67 Anderson, The Welcome of Strangers, 16.
expected, that I felt satisfied that dependence might be placed on their general accuracy.  

As Shortland and subsequent recorders found, whakapapa lines independently provided by southern Maori at various times all stretch back to Rakaihautu, and they are remarkably consistent.  

While it seems the Peninsula was not specifically associated with Rakaihautu, whakapapa makes plain that it was an early site of occupation: there are extant whakapapa lines to Te Rapuwai, and place names associated with Te Rapuwai on the Peninsula.  

In summary, tradition points to extremely rapid exploration of Te Waka o Aoraki, the South Island, by the earliest arrivals. The rapidity of exploration was not only driven by the economic requirement to locate needed resources, but probably also by a competitive desire by different leaders to ascertain, name, and claim as much as possible of the available resources for themselves and their descendents. This is a consistent phenomenon in early and late traditional accounts spread throughout New Zealand.  

Tradition does not tell us who named and claimed Muaupoko, the Otago Peninsula, only that Te Rapuwai, a people subsequently grouped with others under the name Waitaha, were the first inhabitants of the Otago Peninsula. The retention of some of their names and lines of whakapapa point to continuity of occupation upon the Otago Peninsula ever since initial settlement. A comparison of whakapapa suggests initial settlement might have occurred anywhere between the tenth to twelfth centuries. But I do not know of any more traditional information about the activities of either of these groups on the Otago Peninsula. To confirm the early Maori occupation of the Peninsula, and to gain further insight into its patterns and processes, we must turn to the evidence provided by archaeology.

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69 Ibid., 93.
70 This consistency is also evident in the whakapapa recorded by Beattie. See for example Beattie, Moriori: The Morioris of the South Island.
71 Stevens, "The Names Are in the Land, Our History Is in the Land ".
72 Anderson, "Kin and Border: Traditional Land Boundaries in Eastern Polynesia and New Zealand with Particular Reference to the Northern Boundary of Ngai Tahu (Wai 785)," 47-49.
3.4 Archaeological evidence of Maori settlement

Figure 3: Distribution of large, medium and small ‘moa hunter’ archaeological sites in Otago

73 Jill Hamel, The Archaeology of Otago (Wellington: Department of Conservation, 2001): 16
The archaeological record as presented in Figure (above) makes it quite clear that the Otago Peninsula was a focal point of early settlement within this region. The clustering of large and small sites around the Peninsula is quite pronounced. Unfortunately, however, the archaeological record is (and will remain) fragmentary, for several reasons. Europeans settled in some places such as Harwood, or placed their own defence works on the remains of others such as Pukekura pa at Taiaroa Head. Other places have eroded under the action of the sea, or have been buried deep beneath sand drifts. All of these archaeologically destructive events were more or less inadvertent. However, a great many sites were also damaged or destroyed in pursuing the once popular Pakeha pastime of collecting Maori ‘curios’. For most, this was no more than a hobby – but some hunters were passionately interested, and very determined. There was also a ready market for Maori artefacts, particularly items such as greenstone adzes and tiki, served by a number of more or less professional curio hunters.74

After fifty years of digging up the beaches surrounding Dunedin, J. W. Murdoch explained his motivations for this regrettable activity:

It is safe to say that the Collector benefits both physically and mentally, he has frequently to tramp considerable distances on his hunting or fossicking expeditions, his eyesight is improved and rendered capable of spotting small articles amid a waste of sand, stones and shell heaps, his mind is exercised too, as he has to do a certain amount of gloat over a find, and to speculate and determine all sorts of things in connection therewith, whether the fish-hook just discovered is of human bone or otherwise, and so on.75

Unfortunately, men such as Murdoch were not interested in the sorts of things vital to modern archaeology or environmental history: they were interested only in the artefacts, their treasure, and paid scant attention to the ‘waste’ in which they were embedded. Though a few curio hunters gradually learnt to take more care, leaving us some record of what they found, and where they found it, all the major occupation sites of the Otago Peninsula have been so disturbed and looted for artefacts that archaeologists have largely abandoned them as sources for systematic excavations.

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74 For discussion, see J.O. Samson, “Cultures of Collecting: Maori Curio Collecting in Murihiku, 1865-1975” (PhD, University of Otago, 2003).
To understand what the fragmentary information available from the Otago Peninsula sites might mean, I therefore first examine models of settlement that archaeologists have derived from detailed study of other sites close by, and try to interpret how the information derived from Peninsula sites might fit within such models. The following section outlines a model of Maori colonisation and settlement in New Zealand that tries to explain socio-economic adaptation as part of broader processes of ecological change. Archaeologists, especially Atholl Anderson, are responsible for its development, though it also owes much to the work of paleoecologists such as Matt McGlone. Though some aspects of this model are controversial (I indicate where this is the case) it is by far the most detailed and systematic attempt to understand the patterns and processes of early Maori settlement in its ecological context to date.

3.5 The transient village model

The model outlined below argues that the earliest settlers lived mainly in the South Island, in continuously occupied villages that were abandoned after only a few decades; hence, the 'Transient Southern Village Model'. The model’s first central premise is that the initial colonisation of New Zealand occurred only some 600-800 years ago, probably in the thirteenth or fourteenth centuries, with the possibility that it may have been slightly earlier. Initially based on Anderson’s extensive 1991 review of radiocarbon data, this conclusion contravened the previous consensus that Polynesians probably arrived around 800 AD. Since ‘even a small group of campers leaves an extraordinary amount of visible debris behind’, Anderson believes most early sites should be obvious, and have been found. If so, the earliest radiocarbon dates, such as that derived from Wairau Bar, on the northern tip of the South Island, are probably representative of initial colonisation.

78 Atholl Anderson, "Retrievable Time: Prehistoric colonisation of South Polynesia from the Outside in and the inside out " in Disputed Histories, ed. Tony Ballantyne and Brian Moloughney (Dunedin: Otago University Press, 2006), 36.
In most respects this key premise seems increasingly secure: there are still no archaeological sites whose occupation or use can be dated prior to the thirteenth century, when clear evidence of human occupation suddenly emerges right around the coasts of New Zealand.\(^{80}\) A ‘short’ human history in New Zealand is now widely accepted among archaeologists and historians, because of the consistency of evidence across archaeology, genetic analysis, burnt pollen remains and deposition of volcanic ash showers.\(^{81}\) As noted, archaeological sites all appear after 800 years ago, while between 800 and 600 years ago, pollen analysis reveals a sudden decline in forest species, and an unprecedented surge in charcoal, bracken spores, and grass pollen, now almost universally acknowledged to be the result of Maori burning.\(^{82}\) The South Island’s eastern coast was particularly affected, and stripped of most of its forest cover.\(^{83}\)

Yet there are controversial data that, if accepted, would alter this scenario. Richard Holdaway has published data from kiore bones from natural deposits (laughing-owl middens), dated to the early centuries AD, some thousand years prior to the accepted date for the colonisation of New Zealand, seemingly indicating much earlier human contact – though not necessarily settlement.\(^{84}\) This finding has been subject to

\(^{80}\) Anderson, "Retrievable Time: Prehistoric colonisation of South Polynesia from the Outside in and the inside out," 35-37.
\(^{83}\) Ibid.
intensive debate, and has not been replicated or otherwise corroborated. Holdaway also argues 'many of the extinctions and extirpations occurred when the Pacific rat was the only widespread novel factor in the environment.' He names only wrens and snipe as 'exceptionally vulnerable' species extinct by 1300 A.D. (though biogeographer George Gibb, drawing on his work adds the snipe-rail, several species of frog and several species of large ground-dwelling beetle), but also argues there is evidence that some of the smaller petrels were much diminished in range and numbers prior to human settlement. Holdaway stresses how few small petrels are found in archaeological sites, yet as Anderson stresses they are, nevertheless, present. Since Holdaway's dates for species extinction are inherently speculative, the issue returns to the reliability of the rat bone dates, and is thus inconclusive. I have chosen to disregard this finding pending further evidence.

The model's second key premise is that initial colonisation focused on leeward New Zealand – the eastern South Island and the lower North Island. This area was characterised by more open forest and mosaic vegetation than the heavy dense rainforest found to windward, and it sustained a much higher biomass of large vertebrates, especially moa. Seals, especially the New Zealand fur seal (*Arctocephalus forsteri*) were also more numerous to leeward, and increasingly so southward. Previously, archaeologists had regarded southern New Zealand as a cold and long-isolated environmental frontier for a vulnerable and agriculturally dependent...
people.\footnote{Janet Davidson, The Prehistory of New Zealand (Auckland: Longman Paul, 1984).} In 1994 Atholl Anderson, Matt McGlone and Richard Holdaway recast it as initially providing ‘the nearest thing possible to a leisured life in the central Pacific.’\footnote{Anderson, "The Chronology of Colonisation in New Zealand," 792.}

In explaining the attractions of southern New Zealand for the early settlers Anderson, McGlone and Holdaway downplayed the initial importance of imported horticultural crops, emphasised the importance of abundant supplies of protein and fat, and stressed the significance of indigenous plant foods. They went so far as to claim that ‘the poor nature of the kumara as it was cultivated in New Zealand is suggestive of a period of reversion to an almost feral type’.\footnote{M.S. McGlone, Atholl Anderson, and R.N. Holdaway, "An Ecological Approach to the Settlement of New Zealand," in The Origins of the First New Zealanders, ed. D.G. Sutton (Auckland: Auckland University Press, 1994), 150.} This suggestion is misguided, for feral kumara could not have survived, and it is not clear what ‘almost feral’ might mean.

This error highlights the need to distinguish between the economic and cultural significance of tropical foods to the settlers. It is quite true that tropical crops could not have provided much food initially. In fact the most economically significant plant foods throughout ‘prehistory’ were indigenous: bracken fern root (Pteridium esculentum) and, especially in the south, the roots and stems of cabbage trees (Cordyline australis). These were probably more accessible to leeward. But the extensive efforts to preserve and adapt kumara to New Zealand conditions show that, unsurprisingly, Polynesian settlers retained their deep attachment to gardening, ‘around which much of ceremonial and religious life had been organised in the tropics’.\footnote{Helen Leach, 1,000 Years of Gardening in New Zealand (Wellington: A.H. & A.W. Reed, 1984), 58.} These adaptations were significant: here kumara could only grow for half the year. This necessitated storing kumara tubers for at least six months, in carefully controlled environments, for the tubers suffer tissue death if exposed to temperatures below 5°C. The development of underground storage pits solved this problem, and unconsciously selected for hardier strains requiring a short growing season, rather than size.\footnote{Ibid., 58-59.}

Such considerations have led some leading historians to conclude that Anderson and other proponents of southern (or leeward) settlement have pushed horticulture too far
into the background. Even so, it is clear horticulture need not have constrained the initial population to sedentary settlement in the north. As Anderson points out, most horticulture in New Zealand was essentially swiddening, except in small areas of especially fertile alluvial or volcanic soils, so locational volatility of settlements, not permanence, ought to have been the norm, and particularly in early years when there was an abundance of subsistence alternatives.

Though the survival of Polynesian crops proves some new arrivals must have remained in the north, the key conclusion that an abundance of both carbohydrate and protein initially drew many colonists to leeward is plausible, providing there were sufficient settlers to split up—and it seems there were. Both genetic analysis, and the fact that dates of early settlement are virtually indistinguishable right around New Zealand’s coasts, strongly supports the conclusion that the colonising population numbered some hundreds.

According to Anderson the migrants settled New Zealand in an:

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96 Satisfying this requirement involves making educated guesses on controversial questions such as whether there was one or more colonising voyage, and whether return voyages might have occurred. There is no conclusive evidence on the first question, though findings in several fields point to multiple arrivals, including tradition, the diverse skills brought by the colonisers, and the genetic diversity of both Maori and kioe. At least some 70 women were part of the founding population. Howe, The Quest for Origins, 179. Tradition does refer to a few early return voyages, and it is certainly very tempting to separate discovery and colonisation on pragmatic grounds. There is however no archaeological evidence of return voyaging. Though negative evidence cannot prove the point, there are several absences that are, cumulatively, quite telling. No artefacts or stone from New Zealand have been found in Eastern Polynesia. No pigs or chickens were found in New Zealand (though Cook also more than once failed to import these from tropical sources). No Polynesians encountered by Europeans apparently knew of the existence of New Zealand, though some, such as Anne Salmond, have been tempted to suppose Tupaia’s famous chart, drawn by the Tahitian chief and navigator who sailed with Cook on his first voyage, indicates that Tupaia knew of New Zealand prior to Cook taking him there. However, this is highly dubious: the only evidence provided is a doubtful association between Te-erre-poo-opo-maate-hea, the name for a small island that appears on the maps Europeans later derived from what Tupaia had drawn for them some months before, and the name Te Wai Pounamu, which itself may not have been a very early name for the South island. It is true that the Spanish were supplied with much better information about New Zealand when in Polynesia shortly after, but by then reports of Tupaia’s travels were probably already flying around eastern Polynesia. Most importantly, Cook was of course very interested in the possibility of a large landmass to the south, and Tupaia seemingly knew nothing about this. For a useful discussion see Lewthwaite, G. ‘The Puzzle of Tupaia’s Map’ New Zealand Geographer 26: 16. Anderson’s most recent position on these questions is that ‘Multiple one-way voyaging, probably from the same source and within a fairly brief period, is consistent with the archaeological data’. See Anderson, "Retrievable Time: Prehistoric colonisation of South Polynesia from the Outside in and the inside out", 40.
extremely rapid, undirected expansion – a star-burst pattern regionally. This implies very frequent mobility, as early settlers sought to comprehend quickly what it was that they had found and to capitalise on their good fortune by seeing if there was anything else that could add to it.\textsuperscript{97}

Anderson argues that the motive for this rapid expansion, witnessed also in the settlement of Eastern Polynesia, and the remainder of South Polynesia, was the desire of particular leaders to discover and appropriate unknown pristine resources, thereby securing such property for themselves and their descendents. As Anderson put it in the context of explaining why some of the early settlers of New Zealand proceeded on to so quickly colonise outlying islands such as the Chatham Islands: ‘[t]he time to explore without losing a familial stake in what had been found already was earlier rather than later, and the idea that another New Zealand, or something even better, lay beyond the horizon must have flared in the minds of the early settlers.’\textsuperscript{98}

Anderson’s conclusions about how early settlement was patterned within the leeward area of New Zealand are largely based on the evidence of excavations during the early 1990s at Shag River Mouth in North Otago. Although this site has been extensively modified by previous excavators and eroded by the sea, it is nevertheless the best-preserved site of major occupation in the lower South Island: all the many others are largely destroyed.\textsuperscript{99}

Excavations suggest that the village at Shag River Mouth acted as a central base camp from which smaller camping sites radiated, each of these being the primary source for

\textsuperscript{97} Anderson, "Retrievable Time: prehistoric colonisation of South Polynesia from the outside in and the inside out", 40. Rapid exploration is proved by the widespread distribution of stone such as ‘Tuhua’ obsidian from off the Coromandel coast, found from a very early stage in settlement throughout the country. Belich, Making Peoples, 54; Higham, Anderson, and Jacomb, "Dating the First New Zealanders: The Chronology of Wairau Bar." 420-427. Tuhua obsidian has also been found on Raoul Island in the Kermadecs (colonised 650 years ago. The rapidity of movement to the Kermadec Islands and Norfolk Island, almost immediately after the first archaeological sites appear in New Zealand, is also notable. However Belich argues Anderson’s case is weakened by having to argue people had been to Tuhua from their initial settlements, which seems an ad hoc explanation for why stone from the North Island is found in southern sites, but not vice versa (Belich, Making Peoples, 55). Belich for one therefore maintained the tradition of settlement in the Far North from the 11\textsuperscript{th} century (without any clear corroborating archaeological evidence however), with subsequent rapid dispersal down the South Island during the 12\textsuperscript{th} century. See Belich, Making Peoples, 30.

\textsuperscript{98} Anderson, "Retrievable Time: prehistoric colonisation of South Polynesia from the outside in and the inside out", 38.

\textsuperscript{99} Anderson thus treats it as a ‘type-site’, and argues other sites must be considered as more or less analogous to it. There is no alternative but to consider how closely the patterns of settlement, use and cultural and environmental change perceived at Shag River Mouth might apply to the Peninsula.
a particular set of resources (stone, fibre, food, timber and so forth) needed for the base camp to operate. Anderson and Smith envisage a pattern of fission and fusion, in which a community of several extended families gathered at the central coastal site during winter, but scattered into smaller family units widely distributed along the coast and inland during warmer months – very much like the pattern associated with the later coastal villages Europeans were to encounter. Thus the founding population lived ‘in sedentary settlements, occupied to some degree all year round and for a number of years – small villages in short’. 100

The village as described by Anderson and Smith was a group of around fifty houses, the home therefore of a group of a few hundred people, at least some of whom stayed there all year round, and for some years. 101 Each group of early settlers, it is assumed, tried to maintain communal integrity, access to a range of key resources, and some contact with other groups: continuously occupied coastal villages provided a solution to this set of requirements. 102

The stratigraphy of the village site at Shag River Mouth shows the settlers initially concentrated on hunting moa, seals, and colonies of sea birds such as penguins, petrels and shags. However, the data indicate rapid depletion and even extirpation of the local populations of these large, predictably clustered food sources. The settlers also cleared more and more of the scrub from around the site area, which was rapidly replaced by bracken. As noted, bracken was probably already an important source of carbohydrate for the settlers. This clearance possibly enlarged the estuarine zone through increased erosion and sedimentation. The settlers would have perceived the

100 Anderson and Smith, "The Transient Village in Southern New Zealand": 363.
101 It is difficult to conclusively demonstrate year-round occupation, which in this case was largely inferred on the basis of the large quantities of diverse artefacts recovered, and the rich and diverse midden contents. Different species' presence is one guide. Seal pups and juveniles, for example, are best hunted throughout summer, as are the chicks of blue penguins. All these were common in the middens. The number of trumpeter fish found also indicated a summer occupation, as they tend to move into deep water offshore during winter. Demonstrating occupation during winter is especially difficult because few foods were taken at this time; barracouta at least are best taken between March and April, after they have moved inshore and grown fat in the rich inshore waters. However it is reasonable to generally infer that more limited movement occurred during winter. Ibid.: 283-87, 360-61.
latter changes as improvements to the local environment, as estuarine birds and shellfish became more abundant.  

But the loss of large game was obviously not welcome: hunters had to go further afield as moa populations dwindled in the vicinity of the site. This limited the amount of meat they could retrieve from each bird, thus a growing proportion of meaty leg bones relative to other body parts is found in comparing lower to upper midden layers. The reverse pattern is found for seal remains, since these animals remained tied to their breeding grounds: as the seal colony dwindled, more and more of each animal was eaten, as rarity increased its value. 

Eventually the villagers had to switch to a more diverse diet dominated by fish and shellfish. Other environmental changes reflected in changing diets are a switch from an early focus on hunting colonial coastal birds to open country birds; an increased emphasis on eating dog is also evident. 

Soon after this switch from an almost exclusive focus on large game to a diverse diet of fine-grained resources, the village was entirely abandoned, presumably because of the increasingly impoverished environment around the site, and a decision was made to move to exploit richer resources elsewhere. Extensive radiocarbon dating indicated that the decision was made to leave within two generations after the village was established. 

This finding surprised the archaeological community. Archaeologists had long regarded Shag River Mouth as not only one of the oldest but also one of the longest and most continuously used sites of settlement in the South Island. Large quantities of almost the full range of cultural articles and midden remains they had come to

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associate with cultural and environmental change throughout pre-contact history had been found there, and it was clearly associated with a number of quarries and moa-butchery or kill sites strung inland along the river.\textsuperscript{108}

The explanation outlined above for why the settlers chose to adopt the transient village emphasises the primacy of subsistence: it is treated as an efficient solution to economic imperatives. Richard Walter, Ian Smith and Chris Jacomb have recently suggested an alternative explanation, of the sort perhaps less often offered by archaeologists, because it stresses the importance of 'abstract models of culture', which are of course archaeologically invisible.\textsuperscript{109} Their explanation stresses that the pattern of occupying transient villages was exactly the mode of life of the settlers' homelands. In the southern Cook Islands, for example, villages with an economy based on a wide range of resources, including inshore fishing, birding, animal husbandry and horticulture, were also nevertheless shifted intermittently as resource availability fluctuated.\textsuperscript{110} And such was also arguably the mode of life attempted in the early settlement of the North Island, despite this being a very different environment.\textsuperscript{111} The point they are rightly concerned to make is that the ways settlers approach the settlement of new lands owes more to the cultural traditions developed in the course of exploiting the environments of home than to the opportunities afforded by their new land.

Regardless, the excavations at Shag River Mouth allowed a new explanation as to how the great number of apparently large occupation sites in leeward New Zealand could be accounted for within the short span of time indicated by Anderson's reassessment of radiocarbon dates.\textsuperscript{112} The key conclusion derived from Shag River Mouth was that:

\begin{quote}
a small population in which each group changed its base camp two or three times a century would account for all of the coastal settlements of the 14\textsuperscript{th} century and earlier.\textsuperscript{113}
\end{quote}

\begin{itemize}
\item \textsuperscript{108}Ibid., 11.
\item \textsuperscript{110}Ibid.
\item \textsuperscript{111}Ibid.: 280.
\item \textsuperscript{112}Hamel, The Archaeology of Otago, 11.
\item \textsuperscript{113}Anderson, "The Chronology of Colonisation in New Zealand," 792.
\end{itemize}
Another key premise of this model therefore claims that Polynesian settlements, though they contained few people, with limited technology, had extensive and diverse impacts upon the local environment. Iterating this pattern of local extirpations rapidly caused global extinctions. This, according to Anderson, is typical of colonisation everywhere and at all times. Migration into new environments releases a powerful instinct to expand as rapidly as possible, using the richest resources with pitiless energetic efficiency. Evolutionary fitness drives lineage competition in the use of unowned resources towards levels of overexploitation described as the ‘tragedy of the commons’. In New Zealand this was played out most visibly between the twelfth and fifteenth centuries in the leeward province...  

These ecological effects of Maori settlement, and the ways the settlers adapted to their changing environment, will be discussed in detail subsequently.

3.6 The place of the Otago Peninsula within the pattern of early settlement

The model for early settlement in leeward New Zealand proposed by Anderson and Smith on the basis of Shag River Mouth suggests examining which sites on or around the Peninsula might be similar villages ‘distinguished by their relatively large area (two to five hectares), existence of burials and remains of dwellings, abundant and varied material culture and extensive middens’. In addition, clusters of smaller and more specialised sites should surround the remains of possible villages. Anderson and Smith list as plausible village sites Papatowai, Warrington, and Little Papanui, and probably also Pounawea, Hinahina, and Harwood. Hamel adds Cannibal Bay and Papanui Inlet as sites with similar characteristics. All of these sites lie on the Otago coast, and three are on the Peninsula: Harwood, Papanui Inlet and Little Papanui (see Figure 3: numbers 56, 58, and 62 respectively).

Unfortunately, comparatively little is known about these sites; Harwood and Papanui Inlet are especially opaque (more is known about Little Papanui, but I will argue that it is unlikely to be an early village site analogous to Shag River Mouth). What we

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115 Anderson and Smith, "The Transient Village in Southern New Zealand ": 360.
know of the ‘Harwood’ site (number 56 on the map above) on Akapatiki Flat under the present township of Harwood, suggests that it was the earliest and largest occupation on the Otago Peninsula. Though evidence of occupation has been found over a large extent of the flat, as far as I am aware Maori tradition is mute about the early occupation. But archaeologists did not discover or excavate such evidence. Rather, from the moment Europeans arrived they began finding evidence people had lived on the flat, and inadvertent finds continue to be made today as the flat continues to be developed.

When Octavius Harwood (after whom the present township on the flat is now named) came to establish his home there in the 1830s, he dug hundreds of moa bones out of the ground in the course of making his garden. Harwood had pretensions to a scientific curiosity; in 1838 he wrote in his first letter from the Peninsula to his parents that: ‘I intend collection [of] all the curiosities on natural history possible, and turning them to some account.’ In addition to stuffing ‘a fine collection of native birds’ he constructed many moa skeletons, and later presented them to the Otago Museum. About twenty moa skulls are also part of the collection from Harwood retained by the Museum. However Harwood was not only interested in science – he also advertised moa skeletons for sale in 1872, with ‘a quantity of native knives found with them,’ and his daughter inherited a shed ‘about 8x6 feet, full of boxes of moa bones all round the walls set side on like shelving’. Still more extensive evidence of moa consumption on a large scale was provided by Pat Ryan, who when he came to plough up the flat turned up so many bones that in 1863 a surveyor marked ‘this area strewn with moa bones’ on his map. Hardwicke Knight has estimated that these middens extended over about eight hectares.

120 Ibid.
121 Site record form 144/76
122 Site record form 144/76 This is the number of birds as given in the site record form. Anderson notes Harwood advertising 40 to 50 skeletons, as well as knives. Anderson, *Prodigious Birds: Moa and Moa-Hunting in Pre-Historic New Zealand*, 137.
123 See site record form 144/47.
Many residents on the flat have found cultural material. Lucy Ann Harwood, Octavius’ daughter made the most spectacular find, when while digging her garden she turned up three large and beautifully finished pounamu adzes.

Figure 4: Adzes found at Harwood by Lucy Ann Harwood (courtesy of Otago Museum)

In 1967 local iconoclast Hardwicke Knight dug on the Harwood Flat. He recalls finding two cultural layers in a trench dug in undisturbed sand to a depth of about four feet. The top layer contained moa from at least two species.\textsuperscript{126} Later investigations close by disclosed more moa bones (probably \textit{Emeus crassus} and \textit{Emeus geranoides} or \textit{Pachyornis elephantopus}).\textsuperscript{127} According to Knight, the bottom layer was almost

\textsuperscript{126} Pers. Com. Hardwicke Knight, 30 May 2006.
\textsuperscript{127} This information is derived from the old site record form, 144/76. The site record has this as: \textit{Emeus crassus} and \textit{Emeus huttoni} or \textit{Anouslopterge} and \textit{Emeus gravis} or \textit{Pachyornis elephantopus}. I have provided the current species’ names.
entirely seal bone. In all, the bones of *Emeus crassus, Euryapteryx geranoides, Pachyornis elephantopus* and *Anomalopteryx* have been found at Harwood.  

In 1972, Peter George, a curio hunter, followed in the wake of a bulldozer that had flattened sand dunes to create lawns and gardens. Underneath a sparse layer of shell midden he found moa bone, a ‘dentalium’ necklace, and four cowrie shells. These shells are tropical Indo-Pacific species (three specimens of *Cypraea caputserpentis* and one of *Cypraea annulus*). Only one securely provenanced object from the Pacific has been found in New Zealand – a pearl-shell lure discovered on the Coromandel coast, though other such lures have also been found detached from their archaeological context. The rarity of Mr George’s discovery should make us wary of attributing too much meaning to the shells’ presence. French whalers traded tropical seashells here in the 1830s and 1840s. These shells are much more likely to have come from them than from early Polynesian settlers.

Archaeologist Stuart Park conducted a small excavation that unearthed only fragments of moa bone, but also snapped silcrete blades, stone minnow lures, baroque (two piece) fish hooks, and stone sinkers. Other more casual finds include a basalt adze (in the ‘2B’ style generally regarded as a later development), sinkers, hammer stones, and mother of pearl shell (radiocarbon dated as modern). Because these finds have been removed from their stratigraphic context, they can tell us very little. Some flakes of argillite derive from both Nelson and Southland stone sources, and show that the inhabitants at Harwood had either come from those fairly far flung places areas, visited those areas, or had contact with other people from them, at some stage.

The presence of both large numbers of moa and seal marks Harwood as an early site – though when the last moa species became extinct has always been the subject of fierce controversy, and this shows no sign of abating. Orthodoxy now strongly
suggests a fairly short period of human and moa coexistence, probably ending sometime in the fifteenth century, due to hunting pressure and habitat loss.\textsuperscript{134}

On current accounts, there were ten different moa species, concentrated in different regional and local habitats.\textsuperscript{135} Four species were prominent in the fauna of coastal Otago: \textit{Emeus crassus}, \textit{Euryapteryx geranoides}, \textit{Pachyornis elephantopus}, and \textit{Dinornis giganteus}.\textsuperscript{136} Three others were also regularly present: \textit{Anomalopteryx didiformis}, \textit{Dinornis novaezealandiae} and \textit{Dinornis struthoides}.\textsuperscript{137} The most common species around the Peninsula and the Eastern Otago coastline was the relatively small moa \textit{Emeus crassus}, but the diverse hills, forests, shrub lands and swamps also supported a few of the enormous \textit{Dinornis giganteus}, as well as more middling moa like \textit{D. struthoides}, \textit{Euryapteryx geranoides}, and \textit{Pachyornis elephantopus}.\textsuperscript{138}

Extinction patterns for all these species varied in time and space. Nevertheless, the period of moa-hunting on the Peninsula itself was in all probability very (vanishingly) short. Richard Holdaway estimates, for example, that there may have been a half dozen breeding pairs of \textit{Dinornis giganteus} on the Peninsula food for a single family for months, not years.\textsuperscript{139} If so, the inference may be drawn that sites containing moa in a small area such as the Peninsula were roughly contemporaneous.

Akapatiki Flat is in fact the only place on the Peninsula that moa remains have been found in very considerable numbers, clearly and unequivocally killed, butchered and


\textsuperscript{135} Worthy and Holdaway, \textit{The Lost World of the Moa}, 78, 191-97. Worthy and Holdaway reported eleven moa species in 2002. However, what were then regarded as two species are now seen as one, with marked sexual dimorphism. See Samuel Turvey and R.N. Holdaway, "Postnatal Ontogeny, Populations Structure, and Extinction of the Gian Moa Dinornis," \textit{Journal of Morphology} 265, no. 1 (2005).

\textsuperscript{136} Worthy and Holdaway, \textit{The Lost World of the Moa}, 194-95.

\textsuperscript{137} Ibid.; Hamel, \textit{The Archaeology of Otago}, 14.

\textsuperscript{138} Hamel, \textit{The Archaeology of Otago}, 14.

eaten by humans. Smaller numbers of bones of *Dinornis giganteus* and *Anomalopteryx* have also been found on the margins of Papanui Inlet. While it is quite possible that this was also a fairly substantial site, perhaps even a village, almost nothing else is known about it, for none of the material has been intensively analysed. Several other places on the Peninsula contain moa remains embedded in midden, and may have been contemporaneous with the Harwood site, but none in anything like such profusion. Smaller sites thereby associated with the moa-hunting period include those at Pipikaretu, McKays Beach, Little Papanui, Hoopers Inlet, Allans Beach, Sandfly Bay and Andersons Bay.

It is not always certain that moa were in fact killed at or nearby these sites and eaten there. Moa were much more than a source of meat for the colonising population. Lacking metal, all Polynesians, but especially Maori, relied heavily on bone, which often provided both the raw material and the shaping tools for a great variety of functional and decorative objects. Moa bone was especially useful, and retained or retrieved even after the birds became extinct. So a find of moa may simply reflect places where old moa bone was worked; this is especially likely if the only bone found is leg bone, which was the primary raw material for manufacturing tools, instruments and ornaments. If however the bones found are unsuitable for manufacturing purposes — ribs, vertebrae and pelvic bones for example — then this may be regarded as good evidence for onsite moa consumption. On this basis sites at Hoopers Inlet, Anderson’s Bay, Pipikaretu Beach, Sandfly Bay, Papanui Inlet and Little Papanui provide evidence of moa consumption.

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142 Ibid., 16; Knight, *Otago Peninsula: A Local History*, 13-14.
144 Ibid., 102; Anderson and Smith, "Shag River Mouth as an Early Southern Village."
145 Teviotdale, "The Material Culture of the Moa Hunters in Murihiku," 99; Davies, "The Prehistoric Environment of the Dunedin Area: The Approach of Salvage Prehistory". The need for care here is underlined by the fact that though bone from all six moa species once common in Otago has been identified from the archaeological site called Little Papanui in the course of substantial (if crude) excavations, only two moa pelvic bones have ever been found there; one of these, ‘very old and rotten’, may have been a natural deposit. Davies, "The Prehistoric Environment of the Dunedin Area: The Approach of Salvage Prehistory", 72; D.R. Simmons, *Little Papanui and Otago Prehistory*, Records of the Otago Museum (Dunedin: Otago Museum Trust Board, 1967), 7. The rest is basically fragmentary leg bone. Little Papanui was clearly a significant settlement, for a great deal of cultural material has been retrieved from it, but it was probably first occupied as moa became rare, and perhaps not until
Despite the archaeological and popular obsession with moa, seals were probably more important sources of food than moa. Seals, especially the New Zealand fur seal were unrivalled as a source of energy and fat for the early settlers, and second only to fish as a source of protein.\textsuperscript{146} Their predictability made them very easy prey. From late October older male seals return from their far flung haul outs to re-establish and maintain breeding grounds for the females, who soon return from a brief period of gorging themselves in preparation for the pupping and breeding that follows. Most pups are born in December, and mating is finished in January. Since female fur seals suckle their young for up to ten months, they cannot leave the breeding range, and are never found more than 200 kilometres from the colony.\textsuperscript{147} The pups are weaned between July and October, and many then disperse a little way, so that clumps of juvenile seals ring the breeding rookeries. Maori hunting focused on these easily caught and killed congregations of young seals, reputedly more palatable than the older animals.\textsuperscript{148}

In some early sites such as Pounawea and Papotawai on the Catlins coast seal supplied well over half of the meat volume; at Shag River Mouth, almost 40 percent of the meat was seal.\textsuperscript{149} So as James Belich observed, ‘[i]t may be that ‘seal hunter’ is more appropriate than ‘moa hunter’ for the first inhabitants of Aotearoa.’\textsuperscript{150} Seals were always important to Maori on the Otago Peninsula, and were regularly cropped from rocky shore haul outs there until at least the end of the 17th century.\textsuperscript{151} So, though only Hardwicke Knight’s recollections provide evidence of seal in the Harwood site, it would be surprising if some seal bone were not present. Seal have been found in 36 sites in coastal Otago, usually in association with moa, including the other large early Peninsula sites such as Papanui Beach, Little Papanui, and

\textsuperscript{146}I.W.G. Smith, "The Exploitation and Cultural Importance of Sea Mammals" (paper presented at the The 9th Conference of the International Council of Archaeozoology, Durham, 2002), 8.
\textsuperscript{148}Hamel, The Archaeology of Otago, 30; Anderson and Smith, "Shag River Mouth as an Early Southern Village," 283.
\textsuperscript{149}Belich, Making Peoples, 54.
\textsuperscript{150}Ibid., 43.
\textsuperscript{151}Smith, "The Exploitation and Cultural Importance of Sea Mammals", 10.
Andersons Bay. Seal have also been found at Pipikaretu Beach, and Hoopers Inlet, and at later sites such as Tarewai Point, and Taiaroa Head.\textsuperscript{152}

The settlers did not live on meat alone. Protein cannot comprise more than about a third of people's diet before serious health issues develop.\textsuperscript{153} The early settlers had access to an almost unrivalled larder of protein, and they ate a lot of fat too. People can actually survive in perfect health on a diet of pure fat and protein. Animal fat provides much more energy per gram than does carbohydrate – and the only truly crucial reason carbohydrates are useful is as a supply of caloric energy.\textsuperscript{154} Throughout the south, the desire for fat was therefore intense throughout prehistory, as is most evident in the records made by Cook's sailors. Thus on 25 February 1777 in Queen Charlotte Sound the surgeon William Anderson recorded

They also us'd to devour with the greatest eagerness large quantities of stinking train oil and blubber of seals which we were melting at the tent and had kept near two months; and on board the Ships they were not content with emptying the lamps but absolutely swallow'd the cotton and stinking wick with equal voracity.\textsuperscript{155}

Carbohydrate would still have been keenly sought, not only because of a long cultural history of an abundance of carbohydrates, but because it has greater protein-sparing capacity than fat, and provides fibre that aids digestion (southern Maori developed a range of acidic plant accompaniments to fatty foods to help with this problem).\textsuperscript{156} Southern Maori had access to three plants that could be rendered into sources of carbohydrate: mamaku (tree fern), aruhe or fern root, and \textit{Cordyline australis}, the cabbage tree, or ti. Mamaku however appears not to have been a significant part of the diet anywhere at any stage in pre-contact history, and since it cannot tolerate drier,

\textsuperscript{153} Williams, \textit{E Paakahi Hakinga a Kai}, 68.
\textsuperscript{154} Foss Leach provides an excellent discussion of the essential elements of a human diet. Besides water, vitamins and minerals, these are amino acids (found in protein), the essential fatty acids (i.e. those few fatty acids that the human body cannot synthesise for itself, the Omega 3 and Omega 6 acids), and a source of caloric energy. Carbohydrate is purely useful as a source of energy. However animal fats actually contain much more energy per gram than carbohydrate. Thus, the only reason vegetable foods are necessary in a healthy diet is because they provide sources of vitamins and minerals that are otherwise difficult to come by (vitamin C being the classical example), and to aid the digestion of fat and protein. See Leach, \textit{Fishing in Pre-European New Zealand}, 235-40.
\textsuperscript{155} Cited in Ibid., 250.
\textsuperscript{156} Williams, \textit{E Paakahi Hakinga a Kai}, 70, 172.
frost-prone climates, it was certainly not important on the southeast coast.\textsuperscript{157} Aruhe was important everywhere but its use is largely invisible to archaeology (save for examples of what are deemed to be fern root beaters). Ti was also of primary importance in the south, probably from a very early point: the practice of cooking similar species of ti is widespread throughout Polynesia.\textsuperscript{158} Peter Holland suggests ti later became the third most important food in southern New Zealand, after only titi and eel.\textsuperscript{159} Thus the roots and stems of ti were perhaps the principal source of carbohydrate for the early settlers; they also provided sweetness to flavour bitter foods or to make tasty treats, while ti shoots were an important green vegetable.\textsuperscript{160}

On the slopes above Akapatiki Flat are the remains of numerous umu-ti, the ovens used to prepare kauru, the sweet, starchy, fibrous food derived from the cooked stems and roots of ti.\textsuperscript{161} Cooking kauru was a complex and labour intensive process. Umu-ti were large, round earth ovens usually dug to a depth of over 1.5 meters, with bases 1.5 to 2.0 meters across. They were then filled with hundreds and sometimes thousands of fairly large stones (averaging several kilos in weight), which were heated in large fires before being placed in the cooking pit.\textsuperscript{162} Water was then poured in to generate the steam that cooked the kauru; this required extremely high temperatures (over 1000 degrees Celsius), to be sustained for many hours.\textsuperscript{163} There are hints that some small creeks in this area of the Peninsula were damned to pool the large amounts of water needed for cooking kauru.\textsuperscript{164} The intense heat crystallised the fructose sugars in the ti, which was also rich in fat; its carbohydrate content of almost 25 percent is equivalent to that of yams, while it is richer in sugar than either sugar beet or sugar cane.\textsuperscript{165} Therefore eating kauru amply repaid significant investment of time and energy: one estimate suggests it provided five times as much energy as

\textsuperscript{157} Helen Leach, "Fern Consumption in Aotearoa and Its Oceanic Precedents," \textit{Journal of the Polynesian Society} 112, no. 2 (2003): 143.
\textsuperscript{160} Williams, E Paakahi Hakinga a Kai, 192-95.
\textsuperscript{161} Knight, \textit{Otago Peninsula: A Local History}, 13.
\textsuperscript{162} Williams, E Paakahi Hakinga a Kai, 195-97; Knight, "Umu-Ti," 232-34.
\textsuperscript{163} Hamel, \textit{The Archaeology of Otago}, 43.
\textsuperscript{164} Knight, \textit{Otago Peninsula: A Local History}, 13; Hamel, \textit{The Archaeology of Otago}, 43.
people were required to invest in producing it (and this included a very long march to and from the harvested grove). A kilo of kauru provided a person with about 3,000 calories, enough fuel for a day.\textsuperscript{166}

The great disadvantages of kauru were that groves could only be harvested every four to five years, and that it could not be effectively preserved, and so had to be eaten fairly soon after the harvest. For such reasons kauru harvests became occasions for inter-community feasting and exchange, known as kaihaukai, so that kauru could be more regularly incorporated into diets, and so that none was wasted.\textsuperscript{167} The numerous umu-ti at Harwood clearly indicate Akapatiki Flat saw intensive use for several months leading into and lingering after summer. The number of umu-ti provide possibly the best indication Harwood was an early village along the lines of Shag River Mouth, since the production of kauru was clearly labour intensive, and was traditionally associated with large scale community effort.\textsuperscript{168}

However, very little evidence of cultural material to support this inference has been found. Harwood is not known to provide definite evidence of any burials or dwelling places, nor a great deal of securely provenanced cultural material. Little is known about the midden content, though cockles are found at greater depths at Harwood than anywhere else, and there is comparatively little bird bone.\textsuperscript{169} These latter findings are at least in line with the expectations generated by Anderson’s investigations at Shag River Mouth.

\textsuperscript{166} Williams, E Paakahi Hakinga a Kai, 194-95. As part of an overplayed argument that Maori in the south would have found food hard to come by, James Belich has noted, citing Fankhauser in support, that surviving on kauru from ti alone would require eating 18.5 kilos of pith. See Belich, \textit{Making Peoples}, 65. This is simply because kauru is low in protein: it is not a complete diet in and of itself. However, other sources of protein were very abundant. Fankhauser in fact stresses that ti must have been a very important and rewarding source of carbohydrate. Belich’s use of Fankhauser here is wholly inappropriate.

\textsuperscript{167} Williams, E Paakahi Hakinga a Kai, 165. According to Tikao it became mouldy.

\textsuperscript{168} ‘Copy of report from E. Shortland, Esq., Sub-Protector of Aborigines, to the Chief Protector.’ In Alexander Mackay, \textit{A Compendium of the Official Documents Relative to Native Affairs in the South Island} 2vols. (Nelson: Government Printer, 1873), II, 125; Williams, E Paakahi Hakinga a Kai, 162. Shortland stated that nearly the whole population of some villages would be employed making kauru from December through February. Williams states that large groups of men only would travel to harvest kauru. These may reflect different practices at different places.

Finally, it is worth noting that the adzes unearthed by Lucy Harwood are especially intriguing. Adzes were the primary tool form used by Maori — other tools tended to be made from adze ‘off-cuts’, or adzes beyond refurbishment. They have attracted much attention from archaeologists interested in how the different adze forms and materials Maori used might mark cultural change through time and over space.\textsuperscript{170} Despite the difficulties such studies encounter, we can infer that these particular adzes were probably made at a very interesting point in time — by someone clearly very familiar with the form of adze he was making — but perhaps still coming to terms with the qualities of the material he was using. These forms of adze are otherwise almost invariably either made from fine-grained basalt rock or from an argellite stone whose best source was D'Urville Island in Nelson. These are relatively hard rocks that are highly flakable, and therefore especially valued by the early settlers, whose tool-makers relied on sophisticated flaking skills developed in eastern Polynesia.\textsuperscript{171} D'Urville Island argellite is widely distributed in early sites throughout New Zealand, and many argellite adzes have been found reworked over and over again.\textsuperscript{172} But because of its felted crystalline structure pounamu does not flake: it has to be slowly ground down. The amount of labour required producing adzes of this size and form in nephrite must have been quite stupendous, involving many hundreds of hours of painstaking grinding and rubbing.\textsuperscript{173} It is perhaps for this reason that most adzes Maori made from pounamu have comparatively simple and clean shapes.

These adzes clearly signal the presence of wealth and power at some time, most especially because the adzes were possibly not used as tools. They have been finished to such a fine polish that it would have been very difficult to secure a haft to them and wield them with any force, even with their pronounced lugs. In other adzes of this form, the upper part of the adze head has been left fairly rough, presumably to aid


\textsuperscript{172} Leach, "The Change from Archaic to Classic Adze Forms Revisited," 249.

\textsuperscript{173} Michael Stevens tells me that the Ellison family recount that one of their heirloom mere took three generations to make. Michael Stevens, Pers. Comm. 15 June 2006.
attaching the haft.\textsuperscript{174} If the other clues are sufficient to establish early inhabitation, this find suggests the status of the leading people at Harwood.\textsuperscript{175}

If Harwood (and perhaps Papanui Beach) is a plausible candidate for a major early centre at the hub of wider settlement patterns, we would expect surrounding sites to be more specialised. As noted, there are several smaller sites in the vicinity that bear the marks of some degree of occupation prior to the extinction of moa and can plausibly be regarded as roughly contemporaneous – especially if moa on and around the Peninsula were obliterated in a quick pulse (see Figure 3 above). Almost all of these sites are located very close to the sea, just behind beaches or on the fringes of estuaries near the mouth of the tidal flow. Most are therefore in the lee of a headland providing shelter from southerly winds. There is no apparent concern with defence in the siting of these occupations, and no pa are recorded from the time of early settlement.\textsuperscript{176} However there is no way to reconstruct the sequence of these settlements and because their midden contents are poorly documented it is also hard to discern at what point in a year they were occupied.

What we do know about these sites does tend to suggest food was primarily sought in their immediate vicinity. Near the south end of Pipikaretu Beach in the lee of the rocky point there is a heavily fossicked occupation site where David Teviotdale, who dug over most Peninsula sites in the 1930s, recorded the midden as dominated by moa and fur seal. There were also fish and sea birds, though on the rare occasions birds are mentioned they are described as 'few'. In a rare instance of a species-specific record, Teviotdale did describe finding some albatross bone flutes (April 2, 1926). Dogs were also killed and eaten there.\textsuperscript{177}

At sites near the outflow of Hoopers Inlet, sea elephant, sea lion, and fur seal have been found, along with moa, including the ubiquitous \textit{Emeus crassus} and (possibly)

\textsuperscript{174} Later 'Classic' Maori adzes were also often highly finished – but they were attached to the haft within a socket, and this technique required that the adze head have a smooth surface to prevent differential impacts that could split the haft timber during heavy work. See Leach, "The Change from Archaic to Classic Adze Forms Revisited," 252.

\textsuperscript{175} Jill Hamel, Pers. Comm. 25 April 2005. See also Walter, Smith, and Jacomb, "Sedentism, Subsistence and Socio-Political Organization in Prehistoric New Zealand."

\textsuperscript{176} Hamel, \textit{The Archaeology of Otago}.

\textsuperscript{177} Davies, "The Prehistoric Environment of the Dunedin Area: The Approach of Salvage Prehistory", 84.
Anomalypteryx didifornis. Middens investigated in this area are dominated by marine resources: cockles from the estuary are prominent, as are barracouta and sea birds, including spotted shags, and bones from the now extinct erect crested penguin have also been found.

Before the quarry was dug out at Andersons Bay there was a site that was probably occupied early in the settlement sequence, for it yielded many moa bones, including the rare Dinornis giganteus alongside the common Emeus crassus and Eurapteryx geranoides. Shellfish found and noted included cockles, and mudsnails (Amphibola crenata/Zelidoma spp.); a few bird bones were found too, as well as possibly dolphin.

But the best archaeological evidence from any Peninsula site is provided by a recent study of eroded midden at Sandfly Bay by Shar Briden. Briden’s work has provided the only reliable radiocarbon dates from the Peninsula, and a detailed analysis of faunal remains found at the Sandfly Bay site. Radiocarbon dates derived from both charcoal of short-lived species and shells indicate at least two distinct periods of occupation, the first probably in the fourteenth century, and the second perhaps a hundred years later. Fish, especially barracouta, and a variety of sea birds such as penguins, prions, petrels, shearwaters and shags dominated the midden. The different times of year at which these species are most abundant suggest the site was ‘a multi-purpose camp occupied repeatedly at different times of the year’. Thus, the limited available evidence does suggest a number of seasonally occupied, specialised camps existed on the Peninsula.

In summary, despite a very high density of early sites, the archaeological evidence from the Peninsula is extremely scanty and unreliably gathered. The sheer density of early sites on the Peninsula suggests that it was a significant focal point of what was
probably a much wider settlement system, whether or not an early village was located there. The distribution of these sites and their midden contents shows a large range of micro-environments were exploited for their resources, from inshore open ocean, rocky shores, sandy beaches, tidal estuaries, wetlands, and forests. The ‘Harwood’ site on Akapatiki Flat has the best claim of any site on the Otago Peninsula to being such an early village, a hub anchoring a network of gathering and seasonal camping places.\(^{185}\) However, only a few direct parallels between Harwood and the site at Shag River Mouth have been substantiated: in particular, the explicit evidence of considerable moa consumption based on local hunting (as confirmed by the presence of many complete skeletons), the inferred use of a breeding seal colony, and the presence of many umu-ti.

### 3.7 Environmental relationships and effects of early occupation

The process of making land into landscape began with the principal rangatira, or leaders, exercising and demonstrating their power and status amongst their people in the act of naming. The leaders of the first Polynesian settlers followed the traditional practise of claiming land and resources by naming features of the land after parts of their body, building tuahu, shrines or altars, and framing whakatauki, or proverbs, associating themselves with the landscape.\(^{186}\) It is unclear whether these territories had external boundaries. Since there was probably no inter-group competition for access to resources for a long time there was probably no need for such divisions. This is the most obvious reason why, as tradition categorically states, and as confirmed in the lack of concern for defence in early occupation sites, there was no significant early fighting.\(^{187}\) It seems more likely that the particular named place, or the location of a tuahu, acted as the focal point of a claim, whose force radiated out from that point, declining with distance.\(^{188}\) Subsequently, rights within the claimed

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\(^{185}\) Anderson, Allingham, and Smith, eds., *Shag River Mouth: The Archaeology of an Early Southern Maori Village*, 290.

\(^{186}\) Alan Clarke, *The Great Sacred Forest of Tane, Te Wao Tapu Nui a Tane: A Natural Pre-History of Aotearoa New Zealand* (Auckland: Reed Books, 2007), 42; Anderson, "Kin and Border: Traditional Land Boundaries in Eastern Polynesia and New Zealand with Particular Reference to the Northern Boundary of Ngai Tahu (Wai 785)," 47-48.

\(^{187}\) Beattie, "Southern Maoris," 21. The belief that Kai Tahu ‘had brought the fighting in’ was a common theme amongst Beattie’s informants

\(^{188}\) Anderson, "Kin and Border: Traditional Land Boundaries in Eastern Polynesia and New Zealand with Particular Reference to the Northern Boundary of Ngai Tahu (Wai 785)," 48.
landscape were then held by genealogical proximity to the named ancestor (though
during early settlement there may have been few significant internal divisions of
territory). Individuals of high rank would of course claim the preferential share of any
resources gathered, but it is also unlikely that there was much specialisation or careful
allocation of differential rights to take environmental resources within each group.\textsuperscript{189}

The driving dynamic of the rapid spread of settlement was the desire to strike off so
as to secure new territory, and quite literally, thereby make a name for ones' self. This
was constrained by the need to form and maintain cohesive communal groups. Some
critical resources could only be communal property. For example, large voyaging
canoes would have required communal cohesion to operate.\textsuperscript{190} Access to stone may
have played a similar role – there are signs some early communities in the south
initially relied on the use of large blocks of stone either imported or (more likely)
brought south with them. People would be tied to this resource until local sources had
been discovered.\textsuperscript{191} Even once other stone sources had been found, expeditions to
bring quantities of stone back to a base camp would have required considerable
cooperation. Likewise, the manufacture of kauru required fairly large groups to
cooperate over some time, and the same is likely true of hunting moa, Yet abundant
food would have fuelled rapid population growth, and allowed a rapid expansion of
the number of communities.\textsuperscript{192} In these circumstances lineage competition for status
and resources would have prompted frequent community fission, and the
establishment of new territories. Thus, as tradition has it, Te Rapuwai became 'very
numerous, even on the mountains. Heaps of shells left by them show the extent of
their occupation. They made the land open (i wakapakihi). They filled the whole
island.'\textsuperscript{193}

Another fruitful way to analyse the settlers' environmental relationships is to examine
how they gained and maintained access to energy. Energy is ultimately the common
currency of all economies, and arguably the essential materials of an economy are

\textsuperscript{189} King, \textit{The Penguin History of New Zealand}, 64.
\textsuperscript{190} The largest canoes traditionally required twenty rows of seven men as crew. Jim Williams Pers.
Comm. 30 September 2006.
\textsuperscript{191} Anderson and Smith, "The Transient Village in Southern New Zealand": 369.
\textsuperscript{192} King, \textit{The Penguin History of New Zealand}, 66; Clarke, \textit{The Great Sacred Forest of Tane, Te Wao Tapu Nui a Tane: A Natural Pre-History of Aotearoa New Zealand}, 46.
\textsuperscript{193} Matiaha Tiremorehu, cited in Anderson, \textit{The Welcome of Strangers}, 18.
always the resources used to maximize access to, and storage of, energy. These settlers had left a tropical climate with a relatively continuous supply of energy that allowed a sedentary lifestyle based on agriculture. But the Otago coast’s temperate climate has much more pronounced periodic cycles of energy input. The principal cause of this is the changing relationship between Earth and the sun, as it rises and falls in the sky throughout the year, but the waxing and waning of the moon provides another important pattern to energy flows.

All life in temperate climates adapts to these patterns of energy input in very precise and complex ways. The Polynesians’ greatest challenge in learning to live here was to make such a series of adjustments. Some had to be made immediately. There was, for example, a much greater premium on economically gathering energy during the day, especially in summer, and carefully conserving it during the night, especially in winter. Precious body heat was conserved within the body by adopting much warmer and harder clothing than had been necessary in Polynesia, and gathering around fire at night in small and therefore easily heated dwellings. These forms of dwelling probably changed little until sometime after the arrival of Europeans. As described by the early sealer John Boultbee in 1826 the most substantial dwellings he saw in the south were some thirty feet long, and were:

built of bark and reeds, placed between rows of horizontal pieces of wood, the walls are about 2 feet high, but the roofs are lofty, being nearly 20 feet from the wall plate to the ridge pole...the fires are made at the furtherest extremity of the house... On each side are platforms of a species of bamboo, which are elevated about three feet from the ground; on these the people sleep or sit at work...the passage between the platforms is about 2 feet and extends the length of the house. The roofs, especially if made of reeds, soon acquire a shining black colour, from the constant smoke of the fires.194

Paradoxically, to maintain permanent homes even the earliest people had to be fairly mobile. Coastal areas such as the Peninsula attracted most early settlements probably both because exploration and indeed subsequent travel would have been easiest by sea, and because this maximised access to sea and land based resources. Travel into the interior would have followed watercourses upstream for similar reasons. *Ipso facto* a successful expedition meant carrying a heavy burden home. This placed a

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premium on rapid and energy efficient travel. The settlers developed the ability to travel rapidly downstream in mokihi, a craft of buoyant raupo and flax that could carry considerable weights.\textsuperscript{195}

One factor driving their extensive early explorations was the need for stone suitable for tools, which was indispensable to settlers needing a way to focus energy to fell trees and shape timber for houses and canoes. The Peninsula and its vicinity provided some stone sources suitable for tools, such as basalt and ‘Puddingstone’ (a type of opaline jasper).\textsuperscript{196} But neither stone was ideal for manufacturing adzes, the primary tool form, and some considerable effort was expended from the beginning in retrieving superior stone such as silcrete and porcellanite from the interior.\textsuperscript{197} Quarrying expeditions would have returned with ‘pre-forms’, chunks of rock roughly shaped into the outlines of an adze head, which awaited refining at home. Many or even most other stone tools could be made from the flakes generated in manufacturing adzes, or from their broken remnants. Adzes were prone to breaking, and their cutting edges needed frequent maintenance; a good adze was obviously highly valued, and great pains were often taken to try and extend an adze’s functional life.\textsuperscript{198}

Seasonal changes also made it imperative to harvest as much food as possible during the summer and autumn seasons of plenty, and store it for the leaner, colder times of winter and early spring. Energy could be stored in the body as fat (which also insulated the body and reduced energy loss), or in preserved food. One technique brought from Polynesia was the preserving of fish by drying them on racks under the sun, and this was used for a wide variety of fish and shellfish. But southern Maori later developed preservation methods for other crucial and energy-rich fatty foods such as birds, seals and eels.

However the range of resources that the earliest settlers utilized would have been comparatively small. To harvest a wide variety of concentrations of energy efficiently requires detailed knowledge about the seasonal and diurnal energy flows, and the

\textsuperscript{195} Anderson, \textit{The Welcome of Strangers}, 125.
\textsuperscript{196} Atholl Anderson, "Atholl Anderson's Submission on Otakou," (Hocken Library, n.d.).
\textsuperscript{197} Anderson, \textit{Prodigious Birds: Moa and Moa-Hunting in Pre-Historic New Zealand}, 27.
\textsuperscript{198} Leach, "The Change from Archaic to Classic Adze Forms Revisited."
resulting life patterns, of other species. It was this knowledge that the early Polynesian settlers lacked, and it really gave them no option but to focus upon predictable or large and naïve prey such as seals, colonial sea birds, moa, and other large birds. This forced focus led to severe environmental effects.

What we can say about the environmental effects of early settlement on the Peninsula amounts to a set of fairly safe assumptions, coupled with some more speculative guesses. It is clear that when people first settled here, they had an immediate and significant impact on the ecosystems of the Peninsula, because of their necessarily selective identification and use of concentrated resources in an unfamiliar land. Most obviously, it is safe to assume that all the large terrestrial birds soon disappeared from the Peninsula, as they did elsewhere in New Zealand. Human hunting is now clearly identified as the primary cause of this, though the loss of prey caused by human hunting and rat predation, or loss of habitat due to forest clearance, probably contributed to some species’ demise.\textsuperscript{199} Large birds lost from the Peninsula include the seven species of moa present, and presumably also any local populations of the enormous raptors Haast eagle (\textit{Harpagornis moorei}) and Forbes’ harrier (\textit{Circus teauteensis}), as well as South Island adzebill (\textit{Aptornis defossor}), the New Zealand black swan (\textit{Cygnus atratus}), New Zealand pelican,\textsuperscript{200} and (perhaps) South Island goose (\textit{Cnemiornis calcitrans}) and New Zealand coot (\textit{Fulica prisca}).

Like moa, all these birds were probably extirpated very quickly. These birds all reproduced slowly, maturing late, and having few and small clutches of eggs; their reproductive strategy maximised the chance of each egg laid surviving to produce a breeding adult. They could not cope with even low levels of predation of both breeding birds and eggs, as archaeological and traditional evidence confirm occurred with moa.\textsuperscript{201} Ecological factors do not alone explain the birds’ demise. The other

\textsuperscript{199} The following list of species is derived from more general sources because of the paucity of data from the Peninsula. The limited available data from the Peninsula and the surrounding vicinity is summarised in R. McGovern-Wilson, "Small-Bird Exploitation, an Archaeozoological Approach to the Study of Fowling in Southern New Zealand" (M.A., University of Otago, 1986), 48-53 especially.

\textsuperscript{200} The swan and pelican were once regarded as endemic species: \textit{Cygnus sumnerensis} and \textit{Pelecanus novaeseelandiae}. However they are now believed to be identical to Australian species. The Australian black swan was reintroduced in the nineteenth century. Kerry-Jayne Wilson, \textit{Flight of the Huia} (Christchurch: Canterbury University Press, 2004), 111, 347.

\textsuperscript{201} This is known as a K reproductive strategy, as opposed to the R strategy of producing as many offspring as possible. For discussion of its distribution amongst New Zealand’s avifauna, and the
aspect of the equation is the fact that the colonists were operating in an open access regime, under which there was little or no societal control over the use of resources. For while the settlers named and claimed large areas of land immediately upon arrival, very limited control could actually be exercised within these. As we have seen, within each territory a small number of specific places were claimed and marked by the erection of tuahu (altars), but this ‘point-field system of territoriality’ left most of the land and resources as effectively open access; only preferred places were subject to any competition.\textsuperscript{202} In other words, there was therefore no motive for conservation, since people could always move on to more bountiful territory.

Moreover, in such circumstances, even if they might have cared, Maori were unlikely to be aware of the fact resources such as moa were becoming generally rare (such information would be extremely costly). Still less could they have prevented over exploitation, since though large areas of land might be considered the territory of a particular group, their ability to protect its resources from others was limited. Maori history may stress the force of long standing and exclusive claims to land, but it also stresses the extent and frequency of migration and displacement.\textsuperscript{203}

The best evidence that the Maori colonists could not restrain their impacts is in the disappearance of breeding seal colonies, which were rapidly exterminated all over the North Island, and over much of the South.\textsuperscript{204} As discussed in more detail subsequently, the evidence for the Otago Peninsula is equivocal, but given the reductions to the north, it is certain that fur seals and sea lions diminished, while leopard seals and Southern elephant seals (\textit{Mirounga leoninea}), never very common, probably ceased breeding here.

\textsuperscript{202} Anderson, \textit{Kin and Border}, 48.
\textsuperscript{203} Anderson, \textit{Kin and Border}, 46.
At the other end of the scale, kiore were devastating predators of smaller animals such as New Zealand's unique invertebrates, geckos, skinks, and smaller bird species. Though it is sometimes said that these animals were so damaging because they had entered a land without predators, there were of course actually several highly efficient carnivores already there, most notably two extremely large raptors – the Haast eagle, and Forbes' harrier, as well as the still extant New Zealand falcon (*Falco novaeseelandiae*) and owls (in the south these were *Sceloglaux albifacies albifacies*, the South Island laughing owl, and *Ninox novaeseelandiae*, the morepork). It was in fact because New Zealand's fauna had adapted so specifically to escape these predators that they were especially vulnerable to mammals. New Zealand's birds of prey hunted by sight, from the air, which is why so many New Zealand birds have cryptic colouration, live on the ground, and tend to freeze. The newly arrived predators hunted from the ground, while dogs and rats (which hunt at night) primarily use scent to find their prey. New Zealand's fauna had evolved no physiological or behavioural defences against these patterns of predation.

Unlike their slowly reproducing prey, kiore can breed several times in a season, and some of their young will themselves breed before they are one year old. Populations of this Polynesian rat would have exponentially exploded as they encountered unlimited food and no competition, becoming a 'grey tide' that swept the forest floor. Though they are small (typically 60-80 grams, half the size of the common ship rat), and were long regarded as almost exclusively herbivorous, it is now known that like other rats they are opportunist omnivores that will eat a wide variety of small vertebrates besides the insects, seeds, and fruit that are the staples of their diet: any animal that has a stage in its life cycle where its body size is small enough for the rat to cope with is in danger – and kiore have been found to threaten

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207 Holdaway, "New Zealand's Pre-Human Avifauna and Its Vulnerability," 15.
adult birds up to 250 grams in body weight. The eggs (up to 60mm) and chicks of still larger bird species are vulnerable. Though agile climbers, kiore posed the greatest threat to small ground-dwelling animals. Birds such as South Island snipe (Coenocorypha iredalei), the snipe rail (Capellisrallus karamu), Hodgen's waterhen (Gallinula hodgenorum) and three of New Zealand's six wren species (the Long-billed wren Dendroscantor decurviostris, the Stout-legged wren Pachyplichas yaldwymi, Lyall's wren Traversia lyalli) (probably not present on Otago Peninsula) were rapidly driven to extinction on the South Island. Several frogs were wiped out, as were several large forest-floor beetles. Kiore also altered forest composition, by preferentially consuming seeds of particular species. In summary, though they are much less efficient predators than some of the later mammal arrivals, because they arrived first, kiore have been responsible for more species extinctions in New Zealand than any animal – excepting humans.

A few species, particularly waterfowl such as Finsch's duck (Chenonetta finschi), Scarlett's duck (Malacorhynchus scarletti), the New Zealand musk duck (Biztura delautouri), and New Zealand stiff-tailed duck (Oxyura vantetsi) would have been vulnerable to both humans and kiore. Kuri, the Polynesian dog, may have played a small role in some extinctions, such as that of the New Zealand coot, especially if feral populations became established, but their impact is at present thought to have been very minor. To reiterate: though several processes played a part, direct predation by humans and their companion animals, kiore and kuri were the most important causes of the depletion of life on the Otago Peninsula, as elsewhere in New Zealand. These environmental impacts are not surprising: they are typical of the effects of human colonisation in unfamiliar places.

209 Tennyson and Martinson, Extinct Birds, 10-11; Wilson, Flight of the Huia, 125-26; Holdaway, "A Spatio-Temporal Model for the Invasion of the New Zealand Archipelago by the Pacific Rat Rattus Exulans ", 210 Wilson, Flight of the Huia, 125.
211 Ibid., 126.
212 Holdaway, "Introduced Predators and Avifaunal Extinction in New Zealand."
214 Tennyson and Martinson, Extinct Birds, 10-11.
215 Holdaway, "New Zealand's Pre-Human Avifauna and Its Vulnerability," 16, Tennyson and Martinson, Extinct Birds, 10-13, 48-51.
216 Holdaway, "New Zealand's Pre-Human Avifauna and Its Vulnerability," 17.
217 Worthy and Holdaway, The Lost World of the Moa, 536.
The early Maori also had significant effects on the distributions of plants, as they are almost universally regarded as responsible for destroying half of New Zealand's forest cover, including most of the forest of the eastern South Island. Why so much forest was burnt is a matter of more debate. From the point of view of the Polynesian settlers, just as with their European counterparts centuries later, there were several possible reasons why a place might be burnt. Their ancestors had long burnt forests in order to provide a diverse range of edge habitats, and increase particular resources.

Mature, closed forest, especially beech forest, is not particularly rich in harvestable resources. A mosaic of fern, bracken, ti trees, shrubs, and remnant forest largely replaced south-eastern New Zealand's forests. So, whether or not settlers' burning was always deliberate, it generally increased concentrations of key vegetable foods such as ti tree and fern, and eased travel.

It is unclear whether Maori ever burnt substantial tracts of forest on the Otago Peninsula. But Murray Bathgate has argued they did, and it is worth using his position as a basis for discussion:

Traditional evidence refers to extensive fires in the area during the period of moa-hunting, and fire was used between 1780-1840 in the clearance of the forest for potato cultivation. Early European visitors to the Peninsula in 1844 independently noted that the vegetation cover was open and consisted of low bush and scrub — indicative of a regenerating vegetation cover following the decline of local cultural activity in the area by 1840.

The evidence Bathgate refers to here is weak at best. The 'traditional evidence' he cites is highly dubious. It comes from an account given by a European arrival in the 1860s, who in turn derived his views by talking to an earlier settler, who 'frequently heard it stated by the natives that all the forests were at one time burned down by them, in order to destroy a formidable and dangerous bird, now extinct, and called by them the 'Moa' bird, that often attacked and killed the Maories, and of which they

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221 Ibid.
222 Ibid; John Darby et al., eds., The Natural History of Southern New Zealand (Dunedin: University of Otago Press, 2003).
were much afraid.' This statement is simply unreliable and probably garbled hearsay, which is not tied to the Peninsula (or indeed coastal Otago) in any obvious way. The genuine traditions of early burning refer largely either to Canterbury, Central Otago, and Southland. The most specific of these states that one very dry summer a chief named Ue lit a fire, for reasons unknown, that was fanned by a south-westerly gale into an uncontrollable and disastrous inferno that burned much of Murihiku, and killed many people. Maori may have lost control of the fires that burnt large areas of forest on the Canterbury plains and throughout Central Otago, but on the Peninsula, it is likely, given subsequent European experience, that most if not all fires remained under control.

The descriptions given by early European visitors do not support Bathgate’s stand either, and though this is not the place for an extensive discussion of the vegetation cover of the Peninsula at the time of European arrival, it is worth pointing out that Bathgate’s summary is highly misleading. Significantly, Shepherd, the first European to give observations of the Harbour area in any detail, gave this description:

> When we reached the utmost extent of the Harbour we were agreeably surprised instead of woods on each side as we had all the way up we saw a fine open country chiefly covered with flax plants Fern grass and a few small shrubs.... It is singular the appearance of the country should thus change all at once from woods to open lands.... There is complete division between the open land and the woods. (emphasis added)

This portrayal alone makes Bathgate’s conclusions highly dubious and later discussion will reveal that the European observations made in the 1840s and after cannot support his conclusions either, since they refer not only to virtually intact forest cover, but to the existence of very large trees. However, there is one piece of evidence that may hint at the possibility of early and substantial forest clearance in the

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226 For example, David Monro, here with Tuckett in 1844, who must be one of the visitors of 1844 Bathgate refers to, gives the most complete description of the Peninsula vegetation viewed as a whole: ‘As far as we could see, looking down on the Peninsula, it appeared uniformly covered with wood, and though generally rather steep and broken, affording many long and gentle slopes...At the head of the harbour the country is open and grassy...’ See D. Monro, ‘Notes of a journey through a part of the Middle Island of New Zealand’ in Thomas. M. Hocken, *Contributions to the Early History of New Zealand [Settlement of Otago]* (London: Sampson Low, Marston & Co., 1898), 244.

area. When early market gardeners and residents dug over the soil at the southern edges of the Peninsula and the south Dunedin flats (where Shepherd had noted the singular change to open country) they unearthed hundreds of cords of wood from the peaty bog of which the flats then consisted. On one account this was largely manuka, but the early settler Murray Thomson recalled logs that were the remains of a forest of ‘giant trees’. This provided solid firewood, apparently, and it was all burnt, so it remains completely unclear why or when the forest was destroyed (peaty bogs can of course preserve wood for a very long time). A small change in sea level that drowned the flat might however be the most obvious reason.

Finally, it is worth considering whether the settlers had any motivation to burn here. There was reason for localised clearances to bare the surrounds of settlements, and perhaps the tops of headlands to enable better views of fisheries, and approaches by sea. This probably occurred about Pukekura, for example, on the tip of the Peninsula, and perhaps elsewhere on the Peninsula’s outer coast. But it is not clear that there was any reason for sustained and widespread forest clearance. There was no reason to burn for agriculture. The broken topography of the Peninsula meant its podocarp-broadleaved forests were already diverse, supporting large numbers of ti, areas of flax, and of fern-root, so the motivations cited by Anderson for burning – to increase edge effects – were not so applicable. At the time Europeans arrived the Peninsula’s mosaic of fruiting podocarps, together with large numbers of kowhai and fuchsia, supported a range and density of forest birds perhaps unparalleled on Otago’s east coast. As Geoff Park has stressed, Maori often retained coastal forest even in the north, where cultivation was a viable alternative, because it ‘could hardly be improved upon.’ Since there is no good evidence early Maori burnt the Peninsula, and since it is difficult to provide motivations for them to have done so, it is best to assume that beyond small clearings, the forest on the Otago Peninsula was not burnt in the process of early settlement.

3.8 Summary of Maori settlement

If there is little substantive difference between the portrayals of Polynesian settlement provided by Maori tradition and archaeology, this is largely because they seldom answer the same questions: Maori remember what was personally, politically, and culturally significant, while archaeology reconstructs the structures of economy and subsistence. Where they do examine the same issues, such as questions over the timing of arrival, where early settlement occurred, whether return voyages ever took place – Maori tradition provides narrative recollections of specific events, whereas archaeology constructs models of what seems to best suit available evidence.

There is yet common ground. At least some of the early, if not the very first settlers, came as far south as the Otago Peninsula. This is a tenet of both Maori tradition and the archaeological model I have outlined. Despite an understandable preference for earlier dates among Maori, and a recent preference amongst archaeologists for yet later dates, arrival in about the twelfth century does little violence to either tradition or archaeological data.232 Anderson’s model for early settlement, primarily derived from Shag River Mouth, of a central village surrounded by outlying camps specialised to harvest the resources of a particular environment fits both traditional and archaeological data from the Peninsula fairly well: there are at least no points of outright contradiction, if only patchy confirmation. In this respect however it is worth stressing that arguments from analogy must be treated cautiously, and differences acknowledged. In this respect, we have already noted the absence of forest destruction. It is also important to remember that whereas Shag River Mouth became a place people might halt a day or two at most, en route to more productive areas, Maori continued to live on and around Akapatiki Flat. In fact, as the site record form comments, ‘it is possible that Harwood is one of the most continuously occupied areas in New Zealand’.233 Thus, whatever environmental change occurred as a result of, or merely alongside, Polynesian settlement, the people on the Peninsula successfully learnt to adapt. This was a key part of the process by which Polynesians became Maori.

232 The tendency amongst archaeologists to prefer a still later date – the thirteenth century – is very recent. In 2001, Jill Hamel advocated what was then considered a short prehistory – beginning ‘about 1150’. Hamel, The Archaeology of Otago, 13.
233 NZAA Metric Site Number 144/391
Maori tradition says little about their economic and environmental relationships; here, archaeology and paleoecology are the only guides. Work in these fields makes it clear that the key environmental effects of early Polynesian settlement were a result of an economy focused on the most obvious concentrations of available energy: large colonial species that repetitively clumped together at a predictable place. Initially no one group had any overpowering motive to preserve resources in a locality, for they had established no deep ties to any one place, and they knew other places remained unsettled and untouched. And as Anderson has argued, lineage competition probably ensured resources were overexploited.234 The Otago Peninsula was a key focus point of this settlement pattern, which by the fifteenth century had led to the rapid extinction of all of the larger terrestrial avifauna, severe reductions in the breeding ranges of sea mammals, and diminishment of even the vast numbers of colonial sea birds, probably due to predation by kiore, who also severely affected populations of invertebrates. The cascading effects removing this variety of fauna had on the populations and distributions of surviving plants, animals, and people are poorly understood, though of course they are still being felt today.

It has been convincingly argued however that one fairly immediate effect was that Maori in the south of Te Waka a Aoraki, the South Island, had to devise a whole new strategy of life. 235 Kai Tahu scholar Tipene O’Regan has argued, Maori spent their first 500 years in this temperate environment learning to live with a temperate environment — and the next 500 years learning to put it back together.236 O’Regan’s point is valid regardless of whether quite so much time was involved. The process of putting the environment ‘back together’ revolved around erecting frameworks of property rights that balanced efficient economic exploitation, social allocation and ecological management. It is this story of the mutual adjustment of southern Maori and their altering environment on and around the Peninsula that now concerns us.

236 Cited in David Young, Our Islands, Our Selves (Dunedin: University of Otago Press, 2004), 40.
Chapter Four

Change and Continuity

Na te rakau ke i riro ai te whenua
It was a different stick the land fell to

4.1 Introduction

A great deal of information about how Maori were living in the south from the eighteenth century has been recorded. However there has always been fierce debate over the relationship between the Polynesian people who created the archaeological sites of early settlement in the south that I have discussed, and the Maori who first met Europeans in the eighteenth century. In the mid twentieth century many were still uncertain whether the Maori inhabitants of New Zealand met by Europeans were descended from the early settlers, then known as the ‘Moa Hunters’, or whether they represented two quite distinct groups. As late as 1979 Hardwicke Knight noted:

Of these earlier peoples the traditions have nothing specific to say. There is a gulf as it were that divides them from the Maoris who were here in the 18th century. In writing the history of the Maori this hiatus is found over a wide area of the South Island and is seen by some as a cultural, by others as a temporal gap.

This is the infamous ‘hole in the middle’ that long haunted students of New Zealand’s Maori history. It is now largely exorcised: there is no doubt that Polynesians were the only settlers here, and that their Maori descendents maintained a continuous presence in the south. Further, it is unlikely that there were ‘any major disruptions of traditional society, given the strong continuities in subsistence strategies and artefact manufacture.’ Nevertheless, considerable change did occur: the period between about the sixteenth and the seventeenth centuries was an especially critical time of cultural change and environmental adaptation by

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2 Hardwicke Knight, Otago Peninsula: A Local History (Broad Bay, Dunedin: Self-published, 1979), 13.
southern Maori as, in the wake of the loss of moa, and the reduction of seal breeding colonies, ‘a whole new strategy of life had to be devised’.4

Moreover, it was perhaps at around this stage that the climate began to deteriorate. Since about 750 A.D., Polynesians throughout the Pacific had enjoyed relatively benign climate conditions (the Little Climatic Optimum) characterised by rising temperatures, generally clear skies and a lack of storminess. These conditions may have stimulated extensive voyaging; certainly, in their absence, voyages to and from the Pacific ceased. There is a consensus that the climate became more difficult – but quite when and to what extent are debated. Patrick Grant has postulated a series of periods of erosion and storminess, firstly around 1200-1350 and again between 1500-1600, with mean temperature trending downward throughout, with particularly cool periods in the fifteenth century, and the later seventeenth century. 5 Patrick Nunn has more recently (and controversially) proposed a much more dramatic change, orientated around 1300 A.D., which he argues marks the sudden advent of a colder, stormier period, which developed into the Little Ice Age (roughly corresponding to the northern hemisphere’s Little Ice Age 1450-1830). Nunn argues temperatures fell 1.5°C over only 100 years.6 Regardless of the rapidity and extent of climate change, the trend towards cooler temperatures and periods of storminess would have exacerbated the environmental problems faced by Maori.

Evaluation of the stages by which Maori may have evolved a strategy to cope with their changing environmental circumstances is still hampered by a lack of evidence. Though traditional history is much more detailed in the recent past, as well as being more reliable, whakapapa remained its primary focus, not environmental interaction. The very valuable data southern Maori did provide on their mahika kai, the places where resources were gathered, were not recorded until the late eighteenth century, well after the influence of Europeans had caused some considerable adjustments.

4 Ibid., 73-4.
Archaeology is in theory the best-equipped discipline to investigate the structure and effects of Maori interaction with the Otago Peninsula environment, but it too has significant limitations. It cannot, for example, reconstruct a sequence of site occupation in the south, and this problem is particularly acute for Peninsula sites where so few acceptable radiocarbon dates are available. Even if a range of carbon dates were available (which they are not), they would struggle to provide sufficient precision. Without them, archaeologists hoping to reconstruct cultural change must resort to artefact analysis, attributing different assemblages of artefacts to different phases in processes of cultural change. ‘Archaic’ or ‘early’ sites are thereby marked by moa and artefacts analogous to Eastern Polynesian forms such as one-piece fish-hooks, while ‘Classic’ or ‘late’ sites are distinguished by the lack of moa and artefacts diagnostic of later Maori culture such as a preponderance of tools or ornaments made from pounamu, and two-piece fish-hooks.  

This crude polarity creates problems, the most intransigent of which is that an archaeological site tends to be simply seen as either ‘early’ or ‘late’, though the timing of the transition is poorly understood, and probably differs from region to region, while sites from the period in between (plausibly as early as the fifteenth and as late as the seventeenth centuries), ‘were and remain almost invisible’. All too often archaeology can tell us very little about the late sites too, largely because curio hunters seeking their characteristic pounamu (greenstone) artefacts targeted them. In fact no known archaeological material has been recovered from most of the places on the Peninsula identified as settlements by Maori or early European informants.

Despite all this, we do know that significant cultural changes clearly occurred in southern Maori settlement patterns, in the discovery and development of resources, and in the attitudes that underpinned and reflected the relationships of Maori to their world. Two broad processes

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8 Hamel, The Archaeology of Otago, 73.

9 Ibid., 217.
were intertwined with these cultural changes. First, this was a time of political ferment in the south. The peoples we have come to know as Kati Mamoe moved south from where the tribe had formed about Napier, and probably began arriving in the South Island some time during the late sixteenth century, followed by Kai Tahu in the late seventeenth century. The timing of both groups arrival on the Otago Peninsula was later still: Kai Tahu in fact only arrived in any numbers on the Otago Peninsula well into the eighteenth century. The new arrivals from the North Island gradually merged with the local people through intermarriage, while eventually establishing political control over the landscape.

Second, Maori throughout this time gradually adapted to the demanding rhythms of the southern environment. As they did so, they developed new patterns of land use that were much less environmentally destructive, as they learnt to manage the land and its resources, and operated within a sophisticated, flexible and fine-grained system of property rights that controlled the access and harvesting of resources.

Kati Mamoe and Kai Tahu inherited most of their knowledge of the southern environment from Waitaha, though they greatly increased the use of some resources, such as pounamu, and probably tītī, fledgling shearwaters. They gradually developed new systems of trade and exchange, and ultimately led a way of life in the south with several distinctive and unique features when compared with the lives of Maori in the North Island. Little is known about environmental change over these later centuries of pre-contact Maori history. Again this is

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12 Far and away the best discussion of the patterns of resource use and the attitudes underpinning these practises is provided by Jim Williams, "E Paakahi Hakinga a Kai" an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu" (PhD Dissertation, University of Otago, 2004).
13 For traditional references to the early lack of pounamu see Herries Beattie, Moriori: The Morioris of the South Island (Christchurch: Cadsonbury Publications, 1999), 47-48. The question of when tītī began to form a substantial part of the diet and a trading staple is not clear. In Ngai Tahu tradition they discovered the fact that tītī were good eating. Herries Beattie, "Nature-Lore of the Southern Maori," Transactions and Proceedings of the New Zealand Institute 52 (1920): 57; Herries Beattie, "Southern Maoris," (Dunedin: Hocken Library, n.d.), 129. Though tītī have been found in archaeological sites dating back to the fifteenth century, some archaeological evidence also suggests that systematic and intensive 'mutton-birding' may have been a late development concomitant on technology such as whaling boats, and the need to service a large trading network. See Williams, E Paakahi Hakinga a Kai, 198; Atholl Anderson, "The Origins of Muttonbirding in New Zealand," New Zealand Journal of Archaeology 22 (2001).
largely a matter of scarce evidence, but it may also reflect an increasing stability in the relationship between the people and their environment.\textsuperscript{14}

The following discussions begin with the evidence provided by archaeology for cultural and environmental change. This provides a basic framework for the discussion of what Maori history and tradition tells us about the processes of political struggle and changing resource use. Traditional knowledge is also the principal basis for a discussion of the evolution of Maori attitudes to their environment, focusing on how territory and access to resources was organised. European observations are used in both discussions where necessary and appropriate. Finally a summary is provided of pre-contact Maori history on the Peninsula that evaluates and compares the evidence of both archaeology and Maori tradition.

\textbf{4.2 Early villages to late villages: the evidence of archaeology}

The extinction or diminishment of large prey meant Polynesian settlers in the south had to devise a ‘whole new strategy of life’.\textsuperscript{15} Maori had to transform their economy, their politics, and their social organisation.\textsuperscript{16} Maori economies in the north solved the problems posed by the disappearance of large game by increasing horticultural production, which drove social cohesion and underpinned the emergence of fortified pa as a means to protect stored food and defend cropland.\textsuperscript{17} In the south, the climate precluded this response; indeed, the archaeological consensus is that southern Maori were unable to maintain large villages, and people were forced to range widely in highly mobile groups, staying only briefly in seasonal camps before having to move onwards.\textsuperscript{18} Population growth is thought to have halted, and some have postulated the population may have even declined.\textsuperscript{19}

The archaeological consensus is thus that southern Maori could no longer sustain themselves by continuous and intensive use of any one area, and that permanent villages were no longer

\textsuperscript{15} Hamel, \textit{The Archaeology of Otago}, 74.
\textsuperscript{18} Hamel, \textit{The Archaeology of Otago}, 1.
viable. As Anderson and Smith point out, maintaining such a village was *highly* desirable: even if occupied for only a few decades, and only by a proportion of the population throughout the year, its economic importance was that it operated as a repository for both visible and invisible assets including stored food and equipment, elderly relatives, and large capital items such as canoes.\(^{20}\) There were moreover critical cultural requirements that committed people to a continuing association with a place. Foremost among these was the need to guard urupa, the places where their dead lay buried, but there were also tuaha, particular places of spiritual significance, which were often associated with important settlements.\(^{21}\) If feasible, therefore, southern Maori would undoubtedly have maintained permanent villages.

The evidence that they could not do so, for as long as two centuries, is largely negative: no village settlements analogous to Shag River Mouth have been discovered in the south dated to the sixteenth or seventeenth centuries.\(^{22}\) Absence of evidence is never conclusive evidence of absence, but villages are the most obvious of all archaeological sites. Indirect evidence also supports this conclusion: in the absence of large villages, and the dominance of seasonal camps, it would be expected that midden contents would be focused on resources available from adjacent habitats. Most middens have not been properly analysed, but the few examples we have are in line with expectations. For example, in the small sample analysed from the Papanui Beach site on the Otago Peninsula’s outer coast, the midden was composed exclusively of marine resources – shellfish, fish, fur-seals, and sea birds from some twenty different species, including five species of penguin, five species of petrel or shearwater, three *Diomedia* species of albatross and mollyhawk, three shags, two ducks and a gull.\(^{23}\) Many of these birds still form breeding colonies in the vicinity on the Peninsula; their breeding colonies were then much more extensive. Albatross and mollyhawk bone was particularly abundant, and it is common in many Peninsula sites. These are all large, meaty birds and their bones were the raw material for a range of tools, ornaments, and musical instruments. No bush birds are recorded from this site, though the site was then surrounded by forest.\(^{24}\)

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21 Ibid, Williams, E Paakahi Hakinga a Kai, 123.
22 Anderson and Smith, "The Transient Village in Southern New Zealand,": 369.
Specialised fishing camps certainly developed, such as that occupied in the early fifteenth century not far to the north of the Peninsula at Purakaunui, where red cod (*Pseudophycis bacchus*) were predominantly sought.\(^{25}\) Occupation at Long Beach between the 15th and 17th centuries was also semi-specialised; fish, especially barracouta, and small birds, dominates its midden.\(^{26}\) A similar pattern is evident in the small assemblage analysed from Taiaroa Head.\(^{27}\) The archaeological record generally suggests fish were never quite as crucial in the south as in the rest of New Zealand, though in coastal Otago fish still became the principal source of protein.\(^{28}\) The record also suggests Maori fishermen in Otago always concentrated on relatively few species, principally barracouta, and red cod, with hapuka (*Polyprion oxygeneios*), ling (*Genypterus blacodes*), wrasses (*Pseudolabrus* sp.) and blue cod (*Parapercis colias*) making up the bulk of the rest of their catch. This is certainly the case, for example, with the midden analysed by Shar Briden at Sandfly Bay dated to the fifteenth century.\(^{29}\)

Gradually however Maori communities did learn how to construct an annual round during which they could harvest, transport and store a great range of widely dispersed and highly seasonal flushes of finer-grained resources, such as small birds, rats, fish, eels, and shellfish.\(^{30}\) Eventually this ensured food could be available when and where it was required, especially over the critical winter months, when food availability was lowest, and


\(^{26}\) Hamel, *The Archaeology of Otago*, 75-6.

\(^{27}\) Smith, "Nutritional Perspectives on Prehistoric Marine Fishing in New Zealand," 16.

\(^{28}\) Ibid.: 25. Though most of the samples are small, in a few cases some thousands of individual fish were identified. Hamel, *The Archaeology of Otago*, 32-34, 76. There are gaps because of the selective preservation of evidence: all records are biased towards bony species whose remains survive to be obvious centuries later. This is most obvious in the absence of cartilaginous species like sharks and rays, but as George Habib notes there are other gaps such as the paucity of material from freshwater fisheries for eels, kokupu, (in both adult and juvenile form), and estuarine fisheries for flatfish such as flounder and sole. Moreover, the cultural context in which middens were created must also be borne in mind. Habib queries whether the patchy evidence of the archaeological record should be the primary source of information about pre-contact fisheries; as he points out, using technologies very similar to those employed by Maori, Cook’s naturalists were able to identify 79 fish species in their catches over a few weeks. According to Habib a mere 27 of these species appear in the entire archaeological record, which contains fewer than 50 of New Zealand’s 150 or so shore-fish species. Argument from a lack of evidence is inherently suspect, however, and Habib’s argument appears moreover to misunderstand the power of statistical sampling. I argue the evidence supports the conclusion that Maori fishing concentrated heavily on comparatively few species, increasingly sought from specialised fishing camps. George Habib, "Ngaitahu Claim to Mahinga Kai," (Hocken Library, 1989), 100-10; Atholl Anderson, "Uniformity and Regional Variation in Marine Fish Catches from Prehistoric New Zealand," *Asian Perspectives* 36, no. 1 (1997): 12.

\(^{29}\) Shar Briden, "Archaeofauna from Sandfly Bay (144/68), Otago Peninsula" (Post-Graduate Diploma, University of Otago, 2005), 55-56.

maintaining energy requirements most difficult. Thus by the time of European contact, Maori communities had a well-established permanent association with the Otago Peninsula, it being described as the 'largest and oldest' of their southern settlements by the sealer John Boulbee in 1828.31 The primary evidence for the way of life Maori had evolved on the Peninsula to support these settlements comes from Maori tradition and European observation, to which I turn shortly. First, however, I discuss the evidence of cultural change provided by the archaeological site ‘Little Papanui’

4.3 Change on Otago Peninsula? Evidence from ‘Little Papanui’

Little Papanui is a site on the back of the southern end of Papanui Beach, a bay opening due east onto the Pacific on the outer coast of Cape Saunders. It has been thoroughly worked over by a wide range of people using very different techniques. It was first investigated by curio hunters, and most particularly by David Teviotdale, then employed by H.D. Skinner of the Otago Museum, who described the site as spread out north and south of a small stream, each side containing three different cultural layers. Jim Samson, who closely analysed the history of investigations at this site, estimates Teviotdale shifted some 1000 cubic meters of sand in the course of over 200 visits to the site between 1926 and 1936, even redirecting the course of a small stream against the sand banks containing cultural material to sluice the sand away.32

All in all, as a result of the various activities between about 1875 and 1972 of 46 individuals, the Archaeological Branch of the Otago Institute, and of the museum itself, the Otago Museum now holds a ‘collection of collections’, or meta-collection, from the site, comprising some 6282 pieces.33 This is one of the largest collections of material from a pre-contact Maori site, so it is unsurprising that much has been written about it from an archaeological perspective.34

33 Ibid., 13, 193.
All of the many collectors had their own peculiar interests and objectives however, that filtered what they regarded as worthy of note. Teviotdale, responsible for amassing more than half the museum collection, was one of the most careful, but even he only wanted items like well finished adzes, chisels, or bird spears; the great majority of the material was irrelevant to him. According to Samson, all the subsequent analyses of the site such as those by Henry Skinner, David Simmons and Atholl Anderson that have primarily relied upon Teviotdale's collection and records 'have, to varying degrees, overlooked his practice of selective curio recovery, his poor 'excavation' methods and his lack of meaningful provenance recording'. Simmons, for example, believed (wrongly) that he could reconstruct the site on paper using Teviotdale's records; he then attempted to demonstrate cultural change by comparing the frequencies of 'diagnostic' artefacts recovered from different layers of the site. However, it is completely unclear what evidence Simmons used to assign most of the artefacts to different layers, and his analysis ignores the fact that the museum collection is not representative of what people found at the site, but rather of what they wished to take away.

Samson argues Simmons' analysis exemplifies further common errors in analysing cultural material in New Zealand museums. In particular, he criticises the assumption that if a particular kind of object, most often an adze of a particular form, is derived from one site deemed to be 'early', that adzes of the same shape found in other sites are also 'early', and hence so is the site - even when the original stratigraphic context for the object is unknown. Samson stresses that this practice has 'sown the seeds for much circular reasoning with regard to the age and distribution of various artefact forms in New Zealand'. The fundamental problem is that we have no idea how long 'early' or 'late' tool or ornament forms were in use, given the multitude of other possible reasons why different people from different times and places might make very similar tools. For example, spade shouldered adzes were once seen as a distinct style of adze that came to prominence at a particular time:

36 Ibid., 10.
40 Ibid., 15.
41 Ibid., 18.
they were therefore used as stylistic and chronological markers. Now, however, spade shouldering is seen as something performed on an adze to try and prolong its useful life.\textsuperscript{42}

Archaeologists can confidently surmise that Little Papanui was not occupied very early because of the scarcity of non-industrial moa bone, and also that it was not occupied after contact with Europeans, because of the absence of any European artefacts. The sheer quantity of material found suggests fairly lengthy occupation, and Samson is willing to hypothesise that it might have seen five or six centuries of either continuous or intermittent occupation, but according to Samson searching for anything more specific is simply speculative, for We do not know the total duration of settlement at the site, nor do we know anything of the nature of that occupation – for example, whether the area saw continuous or repeated phases of occupation.\textsuperscript{43}

Samson concludes we should not seek answers to such questions, and rather look to see how the collection and associated records as a whole can aid evaluation of the way people lived at Little Papanui.

Though there is little evidence of permanent housing, it is notable that Teviotdale found several stone-lined fireplaces at the site.\textsuperscript{44} There are over 400 adzes in the collection, while many other items such as chisels and gouges would have been recycled from unusable worn-out adzes.\textsuperscript{45} Many flakes of stone, probably used in butchery, are also contained in the collection. Other stone and bone tools include stone saws or abraders (472 accessioned items), stone hammers (82), bone drill points (55), needles (116), and points (686).\textsuperscript{46} These sorts of items were not highly valued or selected for, and the site probably contained a higher proportion of them. Archaeologists know little about the uses of most such tools. The collection includes several bone flutes, and some 90 ‘ornaments’.\textsuperscript{47}

The stone resources used include local stone such as basalt, pudding stone or opal jasper, regionally available stone such as silcrete, porcellanite, chert, and small amounts of pounamu,

\textsuperscript{43} Samson, "Cultures of Collecting: Maori Curio Collecting in Murihiku, 1865-1975", 270.
\textsuperscript{44} Ibid.
\textsuperscript{45} Ibid., 273.
\textsuperscript{46} Ibid., 280-81.
\textsuperscript{47} Ibid., 277. Though what should count as an ornament is not always obvious (large fish hook shapes might have been ornaments for example).
argillite from Nelson, and obsidian derived from the North Island. Adzes and their derivatives such as chisels were the dominant wood-working tools. So it is clear that considerable wood-working took place at and around this site. It is also clear that the inhabitants either had to travel or trade over long distances to secure the best stone sources for this purpose.

Given the lack of evidence for substantial houses, canoe manufacture was probably the primary reason for the number of wood-working tools, and access in canoes to the resources of the sea was presumably a primary reason for occupying the site. According to Beattie’s informants, the Peninsula was a primary centre for canoe building on the eastern coast, usually using local totara, which provides timber that is hard, durable, and slow to rot in water. This gently shelving beach would have provided one of the best places to bring a canoe to shore on the Peninsula’s outer coast. It is noticeable that there is a very large quantity of fishing gear in the collection: 1272 fishing hooks, lures and gorges, and 206 sinkers. This reflects the importance of the rich fishing grounds off Cape Saunders.

Samson stresses that the collection generally says little about what foods the inhabitants sought, because the collectors were generally uninterested in these issues, save to satisfy themselves as to whether moa were present. The collection contains quantities of industrial moa bone but, as noted earlier, only a few non-industrial bones were recovered. Teviotdale’s diaries do indicate however something of the range of foods sought, and clearly indicate a single-minded focus on the immediate marine and rocky-shore environment. Teviotdale notes the remains of seals, whales, fish, shellfish, penguins, albatross and other sea birds. Forest birds were also sought, as attested to by the large number of bird spears (131) in the collection. There is clear evidence seal were sought in numbers: on 27 December 1927 Teviotdale recorded that [t]his camp is remarkable for the number of seal bones in the middens. They are nearly as common as moa bones at Shag River. Still, Teviotdale’s description of what he found when he began to sluice the sand in the spring of 1931

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48 Ibid., 273, 75-76.
50 Ibid., 274.
51 Ibid., 276, 79.
illustrates the limitations of our knowledge. 'The refuse was mostly shells with a few seal and
dog and bird bones and a lot of oven stones. I threw all I could into the stream hoping to find
any small curios next time when the stuff will be washed.'

In summary, the Little Papanui site illustrates the great limitations of the data provided by
archaeology for the Peninsula. It also helps explain why by today’s standards, none of the
major Peninsula sites have been properly excavated: as archaeological methods improved,
professional archaeologists came to see Otago sites as largely despoiled and unsuitable for
further research. Archaeology therefore provides only rough estimations of when and how
each site was used, and struggles to explain the relationships between Peninsula sites. To gain
any understanding of Maori life on and around the Peninsula we must turn to what Maori
themselves have to say.

4.4 Waitaha, Kati Mamoe, Kai Tahu: the struggle for political power

Southern Maori trace descent from Waitaha, Kati Mamoe, and Kai Tahu. Information about
Kati Mamoe and, especially, Kai Tahu life in the south is much more detailed than for
Waitaha; the traditions are far more comprehensive, and in many cases whakapapa and
associated narratives from different groups can be cross-referenced. Far more knowledge
about how later southern Maori lived within their environment has also been retained.
However, all of the events and persons described can only be placed in a narrative by
reference to whakapapa, and this does not easily provide much chronological precision, since
people two or three generations apart will often still appear in the same stories. And indeed
this is the case: the majority of the historical figures of Kai Tahu, for example, fall within two
life spans, and most were contemporaries. This has important evidential implications
nevertheless, since the traditional Kai Tahu history Maori provided to early Europeans thus
described events in which their grandparents, parents, and possibly even themselves as
children, had witnessed. As Te Maire Tau and Atholl Anderson put it, this can bring recorded
Maori tradition ‘close to the production of documentary history’. Some understanding of

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53 David Teviotdale, "Diary Relating to the Excavation of Camp Sites [2/12/1928-1/12/1932]."
(Hocken Library, n.d.a).
54 Helen Leach, A Hundred Years of Otago Archaeology vol. 6, Records of the Otago Museum (Dunedin: Otago
Museum Trust Board, 1972), 14.
55 Anderson, The Welcome of Strangers, 53, 58; Te Maire Tau and Atholl Anderson, eds., Ngai Tahu a
56 Tau and Anderson, eds., Ngai Tahu a Migration History: The Carrington Text, 29.
this history is necessary to any discussion of how Maori lived upon Otago Peninsula, because the nature of the property rights that evolved on the Peninsula cannot be understood without reference to the social structures of kinship and community within which they were embedded.

Kati Mamoe and Kai Tahu both have their origins on the North Island east coast, and had some ancestral connections even before they arrived in the south. Kati Mamoe are descended from Hotu Mamoe, whom some whakapapa lines trace as a descendant of Rokoitua (mentioned in the Araiteuru traditions). Hotu Mamoe probably lived around the fifteenth century. By the end of the sixteenth century, some groups of Kati Mamoe had begun to move into the South Island, pushed by the growing population density in the North Island, which precluded any easy expansion there, and enticed across Cook Strait by the prospect of new foods and, especially, by the prospect of better access to pounamu. They knew the South Island as Te Wahi Pounamu, ‘the place of pounamu’ (alternatively Te Wai Pounamu, ‘the water of greenstone’).

Kati Mamoe had probably not long established their mana on the Otago Peninsula when further incursions from northern Maori began. The descendents of these latter groups later called themselves Kai Tahu, after Tahu Potiki, an ancestral chief who lived in the Hawkes Bay area (and was closely related to the key ancestors of Ngati Porou), from whom they could all trace descent.

When these groups began to spill into the South Island, they did not think of themselves as part of the iwi (tribe) Kai Tahu, but as members of the hapu (sub-tribes) Kati Kuri, Ngai Tuhaitara, or Ngati Irakehu. These were the hapu who constituted the Ngai Tahu (in the south rendered ‘Kai Tahu’) ‘invasion’. These groups began to spill into Te Wai Pounamu from the Wellington area in the late seventeenth century or early eighteenth century (more recent

57 Ibid., 26.
59 Ibid., 23, 146; Khyla Russell, "Landscape Perceptions of Kai Tahu" (PhD, University of Otago, 2000), 19; Edward Shortland, The Southern Districts of New Zealand; a Journal, with Passing Notices of the Customs of the Aborigines (London: Longman, Brown, Green & Longmans, 1851), 155. Shortland felt that this was false – that Te Wai Pounamu was the name of a particular place, where pounamu was found. But the Maori custom of naming a wider area after a particular spot (the tino) would explain this confusion. See Williams, “E Paakahi Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu".
estimates suggest the latter; Tau and Anderson place the first incursions about 1710. Some soon continued south, propelled by much the same reasons that had motivated the Kati Mamoe migration some one hundred years earlier.

The two major migratory hapu of the nascent Kai Tahu iwi were Kati Kuri and Ngai Tuhaitara; Kati Kuri were first to cross the straits, and they settled in the Marlborough Sounds before invading the Kaikoura area, where they wrested control of the land from Kati Mamoe. Ngai Tuhaitara arrived in Kaikoura, but pushed on to eventually dominate the Canterbury plains and coast from perhaps the 1730s.

It has generally (if predictably) been argued by Waitaha and Kati Mamoe that Kai Tahu 'brought the fighting in'. To some extent this may be a result of the paucity of Waitaha tradition, but the consistent theme of the remnant accounts is a stress on the peaceful coexistence of Waitaha and Kati Mamoe, and the turbulence and, often, violence, that accompanied the incursions of the nascent Kai Tahu iwi. The traditional history of Otago is especially turbulent, 'a marchland of political instability', as Anderson puts it, and the most protracted struggles between Kati Mamoe and Kai Tahu, and latterly between Kai Tahu septs, were to gain and maintain control over the Otago Peninsula.

Kati Mamoe were in the invidious position of attempting to establish a legitimate stake on the Otago Peninsula by interweaving their whakapapa with the prior inhabitants, while simultaneously fending off the incursions of Kai Tahu. Some idea of the swirling dislocations then occurring is gained from the fact that Te Rakitauneke, a principal chief of Kati Mamoe, successively occupied eight strongholds as he and his people retreated south from the Kaikoura area in the face of the Kai Tahu invasion. At one point he allied with Waitai, a prominent Kati Kuri chief, said to have led 300 men in penetrating into enemy territory far in advance of the remainder of his allies, indeed very soon after Kati Kuri

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62 Ibid., 35-38.
64 Ibid.
66 Ibid.
initiated the first Kai Tahu migrations across Cook Strait. Waitai either built or successfully besieged Pukekura Pa on Taiaroa Head, the strategic location of which above the entrance to Otago Harbour is shown in Figure 5 (below).

![Aerial photograph of Taiaroa Head, location of Pukekura Pa.](image)

**Figure 5: Aerial photograph of Taiaroa Head, location of Pukekura Pa.**

Together Waitai and Te Rakitauneke fought Waitaha and Rapuwai for control of the south. Te Rakitauneke was eventually buried at his last pa on Motupohue, or Bluff Hill. But after his death Waitai tried to encroach further on Kati Mamoe territory, and was killed by the grandsons of Te Rakitauneke in Southland. Only two Kati Kuri men returned to tell their relatives in the north of the resources of the south, and what had happened to their kin.

At this stage then, probably early in the eighteenth century, Kati Mamoe were in the process of claiming mana over the south, and came to dominate the Otago Peninsula, though in partnership with remnant Rapuwai and Waitaha. Meanwhile the newcomers, quickly

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67 Tau and Anderson, eds., Ngai Tahu a Migration History: The Carrington Text, 71.
69 Ibid., 41.
70 Ibid., 36, 41.
consolidated their control over the north of Te Wai Pounamu. The border between the Kati Mamoe and Kai Tahu lay near Taumutu, on the southern margins of Waihora beside Banks Peninsula. Here the Kati Kuri chief Te Ruahikihiki contemplated revenge against the Kati Mamoe for the killing of his father Manawa, slain in ambush while a guest of Kati Mamoe. Moki and Taoka, the sons of Te Ruahikihiki (to different wives) led Kati Kuri hapu onto the Otago coast in force. These leaders have become the eponymous ancestors of the principal Kai Tahu hapu of the Otago Peninsula – Ngati Ruahikihiki, Ngati Moki, and Ngati Taoka.

Moki initially settled peaceably among the Kati Mamoe at Pukekura pa. Taoka, by all accounts cruel and blood-thirsty even by the standards of the time, wished to drive Kati Mamoe from the coast, and he built several pa as he moved south, the last at Katiki on the Moeraki Peninsula. However they and their relatives soon became embroiled in what is now known as ‘the Otago feud’. Leading Kati Kuri fought both one another and Kati Mamoe, in a long cycle of attacks and retaliations to decide the supremacy of mana on the Otago coast. These disputes are far too complex to discuss here, however it is worth relating part of one series of incidents, those surrounding the warrior Tarewai, that illustrate something of the causes and feudal nature of disputes.

According to Otakou traditions, Tarewai was a warrior sent south under his chief and uncle Te Aparaki to revenge the death of Waitai and other Kai Tahu leaders. By this time Moki had assumed the leadership of Pukekura pa, and the settlements in its lee on the inner harbour. However, Kati Mamoe still lived in and around the pa, and still maintained control over the remainder of the Otago Peninsula. They had built a pa of their own very close by, at

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71 Ibid., 41.
72 Ibid., 34-5.
73 Beattie, Traditions and Legends of the South Island Maori, 43, 55; Anderson, The Welcome of Strangers, 47-8.
74 This feud has often been described. For various accounts see Beattie, Traditions and Legends of the South Island Maori, 43-46; Stevens, "The Names Are in the Land, Our History Is in the Land"; Anderson, The Welcome of Strangers, 47-51; Tau and Anderson, eds., Ngai Tahu a Migration History: The Carrington Text, 136-42.
75 There is a significant and illuminating difference of opinion over the timing of the Tarewai tradition, as discussed by Anderson. The conventional view places these events just prior to the truce organised by Rakihia and Te Hau, and have Te Hau giving Pukekura Pa to Tarewai after the truce. But in Otakou traditions the Tarewai traditions occurred earlier than that. They do not like the idea Pukekura was at the disposal of a Canterbury chief. See Anderson, The Welcome of Strangers, 52-56, 222, fn.5, fn.10.
76 Ibid., 52-3.
Rangipipikao, to confine Moki, and guard their principal settlements around Papanui Inlet and at Aurakitarura, Papanui Beach (the archaeological site known as Little Papanui). 77

Conflict broke out between the Kai Tahu at Pukekura, and the Kati Mamoe around Papanui after the Pukekura people asserted a right to the Papanui fishing grounds. This was disputed, so the Pukekura people desecrated and spoiled the fishery by spreading the ash of burnt kelp on the water. One of the Kati Mamoe leaders, Whakatakanewa, who was also a tohunga, then chanted up a storm that wrecked some of the Pukekura canoes. In retaliation, the Pukekura people destroyed some of the beached Papanui canoes. Whakatakenewa then feigned friendship, and gained Kai Tahu’s aid in gathering kakaho, or reeds, for a new house he wanted to build on Okia Flat; in the wake of the following celebratory feast, however, his people ambushed the Kai Tahu party, most of whom were killed.

Tarewai was captured, but escaped the rather gruesome attentions of his tormentors who intended to eat his heart, and waged a one-man guerrilla war from the bush. One of the Kati Mamoe leaders, Te Rakiamohia, then sought peace, and gave himself as hostage to the Pukekura people. Whakatakenewa however, besieged Pukekura from Rangipipikao; Tarewai daringly re-entered Pukekura Pa, and having put Te Rakiamohia to death, led Kai Tahu to a comprehensive victory, evicting his Kati Mamoe opponents from Rangipipikao, and harrying them as they retreated south deep into Murihiku and even into the fiords. 78

These events cannot be precisely dated, and there is some confusion about where to place the Tarewai stories relative to other major traditional narratives. According to Otakou tradition, they occurred just before the Rongopai, the peace between Kati Mamoe and Kai Tahu.

The rongopai effectively marks the transfer of political power from Kati Mamoe to Kai Tahu over the Otago Peninsula. Kati Mamoe, recognising that Kai Tahu had superior weapons, were better organised, and were generally more efficient warriors, sought peace. 79

77 W.A. Taylor, Lore and History of the South Island Maori (Christchurch: Bascands Limited, 1950), 138. According to Taylor a Kati Kuri chief Te Wera, who had a particularly bloody and itinerant life, later dwelt at Aurakitarura for a brief time, after he left Huriawa, and prior to living at Moturapa, or Taieri Island. However this suggestion does not appear in other traditional accounts.


79 Stevens, “The Names Are in the Land, Our History Is in the Land ”; 71; Anderson, The Welcome of Strangers, 50-57; Beattie, Traditions and Legends of the South Island Maori, 52.
leading Kati Mamoe chief, Te Rakiihia, approached the leading Kai Tahu chief Te Hautapunui-o-tu (Te Hau) of Kaiapoi, and offered to share the mana of the land south of Kaiapoi, with a border about the Matau, or Clutha River. The deal was confirmed as was customary by an exchange of women: Te Rakiihia married Te Hau’s sister Hinehakiri, while Te Hau’s son Honekai, married Te Rakiihia’s grand-daughter Kohuai. It is safe to say the peace was in effect by 1790. It did not hold entirely on the Otago Peninsula, where the last small flickers of Kati Mamoe recalcitrance irrupted as the century drew to a close – but the ‘irreconcilables’ were immediately forced to flee into Fiordland, though some were later accepted back on the Peninsula. So one Otakou elder later put it, ‘that, according to me anyway, is how the mana of Kai Tahu was brought down into this land; not by conquest but by agreement and familial support.’

The Tarewai tradition illustrates that disputes could be sparked by disputes over control of resources – in this case the fishing grounds off Papanui. And in fact while the proximate cause of most disputes were seemingly trivial slights to chiefly mana, the underlying causes were invariably leaders’ desire to control territory by bringing it under their mana. But the Tarewai tradition also indicates that constant and costly fighting was required to gain undisputed mana over a place, or a particular set of resources – and Tarewai was, as it happens, eventually killed by Kati Mamoe. As the marriages that sealed the Rongopai indicate, the surest and easiest way to gain access to the land and its resources was not via fighting, but by marriage. Kati Mamoe women were much more valuable captives than men for this reason, and throughout the migration of Kai Tahu into the South Island, their leaders invariably married the women of their erstwhile enemies. For should a Kai Tahu man marry a Kati Mamoe woman, his children would partake not only of their father’s mana, his political and social standing, but also of their mother’s ancestral rights to access land and resources.

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81 Ibid.
84 Stevens, "The Names Are in the Land, Our History Is in the Land ", 72.
87 Williams, E Paakahi Hakinga a Kai, 23.
For Maori, by this time, had very clearly defined systems of property that determined who was legitimately able to partake in different resources. To understand this system, and how it structured Maori occupation of the Otago Peninsula, we need to examine the key concepts that underpinned it: whakapapa, rangatiratanga, and mana whenua.

### 4.5 Land and resources: whakapapa, mana whenua, rangatiratanga.

* Ko Pukekura te mauka
* Ko te Tai o Otakou te wai
* Ko Muaupoko te whenua
* Konei ka wahi taaoka o kaa hapu no Otakou
* Ko Kai Te Pahi, Kati Moki, Kati Taoka,
* Kai Te Ruahikihiki hoki ka hapu

Pukekura is the mountain,
The tide of Otakou is the water
Muaupoko is the land,
These are the treasured places of Otakou,
Who belong to the sub-tribes of Kai Te Pahi, Kati Moki, Kati Taoka
and Kai Te Ruahikihiki.  

As we have seen, the fundamental structure of Maori explanation, the fabric that held the knowledge of the world together, was whakapapa: the pattern of ancestry and descent that placed everything, and every ‘thing’ in a system of precise genealogical relationships that eventually referenced back to the self. 

Maori trace their whakapapa ambilineally, from both mother and father. Whakapapa relationships defined the tripartite Maori social structure of iwi (tribe), hapu (subtribe or clan) and whanau (family). Iwi, the largest social grouping, were largely latent entities only summoned into being by an external threat. Otherwise day to day business and political decisions were typically made at the level of the hapu. Rangatira, or leaders, led hapu, and it was under their authority that land and other major property such as large canoes was held. Conglomerations of whanau, or families, were the constituents of hapu. The ancestral relationships between iwi, hapu, and whanau are neatly encapsulated in

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88 Mihi, or statement of identity, from Ngai Tahu exhibition, Otago Early Settlers Museum.
the alternative meanings of these words: iwi (bones) were hapu (pregnant) with whanau (birth).91

Whakapapa actually located every individual in clearly defined relationships with all other entities: not just people, but animals, plants, and places, all of which had atua, gods or ancestral spirits, including ultimately Rangi and Papatuanuku, personifications of the earth and sky from whose union all life traced descent. The crucial structuring mechanism of Maori whakapapa is the distinction between tuakana and teina, respectively senior and junior.92 The nature of each person’s relationships with the wider world was shaped by whether they ought to adopt the tuakana or teina role. People are teina, junior, to all the plants and animals. But to know whether one was tuakana or teina to another person, always a matter of some importance, required detailed knowledge of one’s own whakapapa, and, ideally, knowledge of everyone else’s descent too.

Whakapapa was thus the primary determinant of social status, for it was the primary source of a person’s mana, their prestige, power and authority; the need to maintain and if possible increase one’s mana was the key dynamic motivating social action.93 Whakapapa also underpins the key concepts that structured Maori property systems: mana whenua, and rangatiratanga.

The mana whenua are the people in whom the mana (the prestige or authority) of the whenua, or land, is vested. The mana whenua hold responsibility for their land, and its resources.94 The source of this association is the binding of one’s tupuna (ancestors) within a place, most especially through burial, and the ability to demonstrate descent from the tupuna from whence the rights and responsibilities derived. Though rights to control access and use are inherently bound to these responsibilities, this is ultimately less a matter of a right of property ownership, than of belonging to a place, and inheriting the responsibility to protect that place. This is most clearly symbolised in the practise of reaffirming mana whenua status by planting the placenta of new-born children in the land to bind the person to the earth of their ancestors.

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91 Tau and Anderson, eds., Ngai Tahu a Migration History: The Carrington Text, 30-31.
92 Williams, "E Paakahihakinga a Kai'
93 Ibid., 30-31.
94 Williams, E Paakahihakinga a Kai, 80.
and the living things that the land sustains. In Māori, for this reason, whenua is the word for both placenta and land.95

Whakapapa also largely determined who became rangatira, the leaders, with the right to exercise authority, rangatiratanga, and lead groups of people.96 Whakapapa was therefore the primary determinant of both who could exercise rangatiratanga, political authority over particular people, wherever they might be, and of who the mana whenua were, those with primary ancestral rights to a particular places resources, whomever else might be there.

These concepts prescribed how all rights to any resources could be gained, retained, or usurped. Once a place was named as belonging to a person it belonged to their descendents, the mana whenua. Mana whenua status was often asserted by gifting to others part of the harvest from a place; acceptance of the gift carried an implied acknowledgement of the right to offer it.97 While the mana whenua remained in residence, retaining ahi kaa, the ‘long-burning fire’ of occupation, any newcomers to a place could only gain a more or less permanent right of access to a resource by offering suitable koha, or gifts, to the mana whenua.98

The rights of the mana whenua could, in theory, be usurped by raupatu or conquest, followed by permanent occupation. But the mana whenua had three generations to return and regain their rights, which only fully lapsed if they could not reassert ahi kaa and rekindle their mana within a place, in that time.99 Alienation of lands through conquest was therefore rare, and was, besides, always accompanied by intermarriage that provided descendents with much more secure rights.

On occasion, rangatira, with the consent of the community, could allocate new comers rights to use resources or inhabit land. This practise was known as tuku whenua (loosely, land gifting). New comers also inherited obligations to the resident community, since the purpose of the gift was to augment the community, and establish a mutually beneficial relationship. If the new comers failed to meet their obligations, they might be stripped of resources. If they

95 Ibid., 84; George Asher and David Naulls, Maori Land (Wellington: New Zealand Planning Council 1987), 4.
96 Williams, E Paakahi Hakinga a Kai, 80. Although social rank was primarily a matter of whakapapa, leadership skill was also important. Poor leaders did not retain their following for long.
97 Ibid., 85.
99 Williams, 82-85; Evison, Te Wai Pounamu, 8.
severed their associations with the community, they forsook all rights to the land. In essence, rights to land and resources could be shared, but could not leave ancestral hands. The key principle was not spatial exclusivity, but association within a community.\textsuperscript{100}

The crucial point to grasp is that Māori property rights were primarily derived from descent, but at a secondary level could be accrued through long-term occupation, or established association with a community. Rights thus reflected relationships.

In 1894 Tame Parata gave a description of how his grandfather Te Matahaere maintained his rights that illuminates the interplay of ancestral right and political power in controlling access to land and resources:

He owned the country all the way up from Shag Point to Hawea and Wanaka. It was his hunting ground. He went up there to snare wekas and catch eels in the winter and in the summer came down to Shag Point. He went up in this way to keep up his title so that no party should dispute it. Nobody dared cross the range from the Waitaki to the country without asking his permission. If a chief did so there might be a long talk which would be accepted as it was a mistake but anyone below this rank was knocked on the head.\textsuperscript{101}

Te Matahaere thus asserted the political power to control access to this land. Travellers, and people with ancestral rights to specific resources within the area (of whom there would have been many, from different hapu) had free passage over the land only once they had informed Te Matahaere of their intent. But the consequences of trespass varied according to rank, which altered Te Matahaere's relationships with the person trespassing.

This system of political power and its relationship to property explains how and why Kati Mamoe and then Kai Tahu merged with the previous inhabitants of the Otago Peninsula. Young fighting men unsurprisingly dominated the southward migrations of Kati Mamoe and Kai Tahu. Only the higher-ranking leaders brought women with them. This obviously stimulated demand for local women. The beauty of Kati Mamoe women was celebrated amongst Kai Tahu,\textsuperscript{102} and a large number of Kai Tahu men married Kati Mamoe women.\textsuperscript{103}

While the men of Kati Mamoe were decimated, and their mana eroded, so that fewer and

\textsuperscript{100} See Waitangi Tribunal, \textit{The Muriwhenua Land Report} (wellington: GP Publications, 1997), pp24-25
\textsuperscript{103} Williams, E Paakahi Hakinga a Kai, 80-81.
fewer in the future would choose to claim descent from them, their women imparted the status of mana whenua to the children they had to Kai Tahu men, and the various bundles of rights to resources and land tenure that accompanied that status. This is why, as the whakatauki (proverb) with which this chapter began has it, ‘it was a different stick the land fell to’: not the taiaha of war, but of the bedroom.\textsuperscript{104}

Thus the formerly common opinion that Waitaha and Kati Mamoe ‘died out’ or ‘vanished’ has no basis.\textsuperscript{105} Whakapapa are always provided with a purpose, and there was increasingly little political profit in declaring Waitaha or Kati Mamoe ancestry to Europeans interested in finding out who to negotiate with.\textsuperscript{106} But while rangatiratanga, or political authority, was generally traced via male ancestors, tracing female ancestry was still an important aspect of deciding who the mana whenua were – the people in whom the mana of a place was vested, and who had pre-eminent rights to its resources.\textsuperscript{107} This is why many Kai Tahu hapu are actually named after Kati Mamoe women.\textsuperscript{108} Men of primarily Kati Mamoe descent in fact retained significant political authority on the Otago Peninsula, though they often emphasised their Kai Tahu lineage.\textsuperscript{109} This is seen in the Otakou people’s statement of identity at the beginning of this section, which lists the primary hapu of Otakou: Kai Te Pahi, Kati Moki, Kati Taoka and Kai Te Ruahikihiki. While the latter three hapu are closely related clans of Kati Kuri (Moki and Taoka were sons of Te Ruahikihiki to different mothers), the first is a Kati Mamoe hapu.\textsuperscript{110}

\textsuperscript{104} Ibid.

\textsuperscript{105} Several European writers have promoted this view of Kati Mamoe as a ‘lost’, or ‘vanished’ tribe, whose remnants encountered Cook in Dusky Sound. Beattie’s work ought to have ended this misconception, but it has unfortunately lingered in the works of historians such as the Begg brothers and John Hall Jones.

\textsuperscript{106} Beattie, \textit{Our Southernmost Maoris}, 85.

\textsuperscript{107} Williams, \textit{E Paakahi Hakinga a Kai}, 80-81; Dacker, "He Raraka a Ka Awa," 23.

\textsuperscript{108} Williams, \textit{E Paakahi Hakinga a Kai}, 80-81.

\textsuperscript{109} Thus if Karetai, the prominent nineteenth century leader at Otakou, had pre-eminent rights to the Otago Peninsula over and above Taoka (a disputed point), his cousin, even though Taoka descended from the senior tuakana line on their Kai Tahu side, this would be because Karetai was descended from the Waitaha and Kati Mamoe mana whenua lines of the Otago Peninsula on his mother’s side, whereas Taoka had married into those lines through partnering a close relative of Karetai, rather than being descended from them. The complications surrounding this issue were played out in the Native Land Court hearings of 1868. See Native Land Court, "South Island Native Land Court Minute Books 1A," in \textit{Maori Land Court Minute Books} (Dunedin: Hocken Library, 1868).

\textsuperscript{110} Beattie records that Karetai was usually described as a ‘half-and-half’, that is, a mixture of Kati Mamoe and Kai Tahu, and that ‘Kaitepahi’ was his hapu on the Kati Mamoe side. However, Anderson has it that Ngai Te Pahi, the hapu Karetai stated he belonged to in 1853 was a Te Ruahikihiki group hapu, and that Gati Hawea, Karetai’s choice of hapu in 1849, was his Kati Mamoe side. Anderson, \textit{The Welcome of Strangers}. The best documentary evidence of the continuing presence of Kati Mamoe as a politically significant presence on the Otago Peninsula is perhaps the census taken by Strode in 1861. This listed the leading chiefs of Otakou together with their hapu affiliation. Six chiefs were recorded at Otakou, of whom three identified as ‘Ngatiruahikihiki’ (Kai Tahu), and three as ‘Ngatimamoe’. See ‘Report from Mr. Assistant Native Secretary Strode,’ in Alexander
As Waitaha, Kati Mamoe and Kai Tahu mingled in the south of Te Wai Pounamu a very complex pattern of property emerged, based on an intricate combination of whakapapa, historic use, and political relationships. Though there are no detailed historical observations or traditional accounts of how the system was organised or operated, the broad parameters are clear enough.¹¹¹

Land was seen in different ways for different purposes. In one sense the Otago Peninsula was simply part of the broader tribal territory, the area all Kai Tahu would defend against external aggression, if necessary. Kai Tahu thus collectively held sovereign political control over their territory, but exercised no economic management functions (being in effect a latent entity, most important relative to relations with outsiders). In this sense the Otago Peninsula was part of the land held in common by all Kai Tahu, in that they might all travel through it, providing they behaved courteously.

The communities at Otakou on the Otago Peninsula also formed a crucial node within a district, over which they exercised political authority vis-à-vis the other Kai Tahu communities. This district, or takiwa, extended from Purehurehu, just across Otago Harbour, southwards and inland as far as the lakes district. Its southern border was still probably in flux during the eighteenth and even early nineteenth century, but the most common suggestion is that it extended to the Clutha.¹¹² This sort of territorial claim was essentially a function of political power however, and so waxed and waned with the fortunes of various hapu, under their rangatira. This was because such political boundaries were necessarily expressed in terms of territory, they depended more on the control over people that was a function of mana, than over territory; they were therefore, open to challenge.¹¹³ As W.H. Roberts recorded, Maori:

knew the exact boundaries of their own land, as accurately as if they had been laid off by surveyors, and they would occasionally crop a small area of the most distant point,

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¹¹² The boundary probably shifted somewhat depending on the waxing political power of Kai Tahu, and on who was asked. One of Beattie’s informants said that a post (poupoutunoa) at Clinton marked the boundary after the rongopai. Herries Beattie, "Traditions and Legends Collected from the Natives of Murihiku (Southland, New Zealand) Part V," Journal of the Polynesian Society 25, no. 99 (1916): 97. Yet in 1880 Wiremu Potiki, a chief at Otakou, argued Otakou territory extended south to the Mataura. Anderson, The Welcome of Strangers, 108.
¹¹³ Eddie Durie, “Custom Law”, 88.
to prove their undisputed claim, or would dig fern root there with the same object. In these cases their title held good – they would say “i ka tonu taku ahi i runga i taku whenua” (my fire has been kept burning on my land).\textsuperscript{114}

Then again, from the point of view of the leaders of the communities at Otakou on Otago Peninsula, the landscape could be seen as traversed by a number of ‘ranges’, that is routes of travel which different members of the community would trace out in the course of collecting resources for return to the broader community. The community leaders at Otakou ensured the annual round of their constituent members cumulatively gathered the necessary quantity and diversity of food, fibre, and stone the community required to cope with winter together.\textsuperscript{115}

The most important sense, however, in which the environment was divided into tenures, was through allocating different use rights. The building block of Maori property systems was a use right to a discrete resource within an area. The area might be more or less loosely defined, the resource was precise; one might, for example, take birds, but not berries. Such rights did not confer an exclusive right to all the uses of an area. They were functional allocations, not spatial allocations.\textsuperscript{116}

Hapu authority vested in rangatira oversaw the distribution of resources. Only particular members of particular hapu could use most of the important resources in any particular place, via their exclusive ancestral rights – which rights they might defend against all others, including other Kai Tahu. The individual right was thus one of access and use, subject to the wider hapu interest.\textsuperscript{117} Disputes over use rights amongst hapu members would be mediated within the hapu, under the authority of rangatira.\textsuperscript{118} The hapu right was not absolute, and resource management was primarily retained by the actual users. However, the interest of the wider community or hapu would be invoked to prevent the extension of use to outsiders, since that affected everyone. It might also be invoked to prevent uses that provoked conflict, and to ensure that use benefitted the community as a whole. And it would also be invoked to rahui, or retire resources, which were threatened by excessive exploitation.\textsuperscript{119} Eddie Durie has thus characterised Maori customary tenure as:

\begin{itemize}
\item \textsuperscript{114} W. H Roberts, "Papers Relating to Maori Nomenclature," (Dunedin: Hocken Library, n.d.), 22.
\item \textsuperscript{115} These distinctions are largely based on Atholl Anderson, "Mahinga Kai, the Submission of Atholl Anderson," (Hocken Library, n.d.), 73.
\item \textsuperscript{116} See generally Banner, "Two Properties, One Law".
\item \textsuperscript{117} Eddie Durie, “Custom Law”, 84.
\item \textsuperscript{118} Eddie Durie, “Custom Law” 75.
\item \textsuperscript{119} Eddie Durie, “Custom Law”, 72.
\end{itemize}
An ancestral trust estate of indefinite magnitude vested in hapu but with internal use rights distributed amongst such ancestral descendants who used them, the use rights being transferable within families but use rights not being transferable outside of the group without a general group sanction.  

To avoid travellers trespassing by using reserved resources, they were generally marked off, while some resources were reserved specifically for travellers. Resource areas were delineated using a variety of man-made or natural features, including at smaller scales stones, posts (pou whenua), trees, marks, and at larger scales rivers and mountain ranges. These were sometimes boundary markers, but were often planted at the centre of the resource, so that rights radiated from that point, becoming more and more uncertain with distance. As we shall see, some places might contain several resources; it was the common pattern to have rights to take one resource, but not another, from the same place. Different people within a hapu, as well as entirely different hapu, could have rights to different resources in the same place.

Unlike the pattern of land tenure in the Pacific (and perhaps to an extent) in the North Island, 'ownership was not congruent with management'. Hapu membership determined the use rights access to particular resources on a piece of land. But hapu were typically fragmented, and members of any one hapu could be found living in several village communities. Communities were in turn typically made up of people from several different hapu. Thus, 'the common form of community structure in the Ngai Tahu region, then, was multi hapu settlement and, thus, multi-settlement hapu distributed over much of the tribal territory.' Therefore, hapu, which owned resources, did not necessarily organise how those resources were incorporated into communal economic activity. Communities generally managed that function, as the rangatira who led a community organised the annual activity of their people.

Thus, as Harry Evison points out, 'a Ngai Te Ruahkihihi chief living at Otakou would have hereditary rights at Banks Peninsula, Taumutu, Arowhenua, and perhaps Foveaux Strait, and

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120 Eddie Durie, “Custom Law”, 80.
121 Edward Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)," (Hocken Library, n.d.).
122 Eddie Durie, “Custom Law”, 86
123 Eddie Durie, “Custom Law”, 86
124 Anderson, "Mahinga Kai, the Submission of Atholl Anderson," 73.
125 Ibid., 72.
his family and adherents would share in these.\textsuperscript{126} He would have these rights via his different hapu memberships (every leading person was likely to have several hapu to which they could choose to affiliate, depending on the circumstance, simply because one could choose to trace descent through either parent, and because Kai Tahu and Kati Mamoe were so interrelated). Other important people in the community he headed would have different hapu memberships again, from which they derived rights to different resources. As Anderson concluded, "[a]ny family could possess a bundle of actual or potential rights of tenure and use, the constituents of which might be dispersed the length of the tribal territory."\textsuperscript{127}

This pattern was found throughout Maoridom\textsuperscript{128}, but was probably increasingly clear the further south one went, as territories expanded, and population density dwindled. In Murihiku (the far south), very large territories were required to sustain people in the absence of agriculture. In the south, communities fragmented into various sized groups which were scattered throughout much of the year, around a vast area, taking advantage of the temporary and localised places of abundance, known as mahinga kai (sometimes rendered mahika kai in southern Maori), which they had painstakingly discovered, developed, and defended, and returning to enjoy the fruits of their labour, as they wintered at home. There they met the other families with whom they formed a community, and who would have returned home bearing a complementary set of foods and resources. The following section examines the nature of these different resources, the property relations surrounding them, and how they were used to sustain the communities at Otakou on Otago Peninsula.

4.6 The nature of Maori occupation: following the seasonal round

Southern Maori learned to live within the cool seasonal southern environment by discovering the timing and placement of the seasonal energy surges of each species of bird, fish, and plant, and then devising means to efficiently harvest those surges, which were widely scattered in time and space. They devised means to preserve, transport, and store surpluses, and each community contributed surpluses to trading networks, which exchanged and distributed resources missing from particular community environments. All this ensured that the Otakou communities could survive winter in some comfort together. The following

\textsuperscript{126}Evison, Te Wai Pounamu, 7.
\textsuperscript{127} Anderson, Wakawaka and Mahinga Kai, 635.
\textsuperscript{128} Eddie Durie, “Custom Law”, 74, 85.
discussion outlines the seasonal activities to gather food and resources undertaken by Kai Tahu from Otakou, together with the key technologies that underpinned this way of life.

Figure 6: Some Key Maori Localities on Otago Peninsula
Each community had their own annual schedule, adapted to take best advantage of the mix of local resources, more distant resources to which the people could claim hereditary rights, and resources that could be gained by exchange. People moved from place to place along clearly defined routes, shifting in order to harvest a resource when it was at its peak in terms of quantity or quality. However in general, people dispersed to gather food from late spring through to autumn, before returning to their permanent homes on the Otago Peninsula to survive winter and early spring.

For Southern Maori, the New Year commenced anywhere between late May or early July with the onset of Tukurua, the cold winter season; it was marked by the rising of the star Puaka (in the constellation Orion) over the horizon. Let us follow the general pattern of people’s lives over the course of a year from this point, tracing the relations between people and different sorts of resources that, in sum, defined their environmental relationships. At this time of year, the people would have been at their most concentrated, clustered together in their homes on the Otago Peninsula: these were fairly permanent settlements known as kainga nohoanga tuturu. The most important of these, as at Otakou, were associated with urupa, burial grounds. The need to protect the remains of the community’s ancestors committed the people to continuing residence there. As in earlier times, most were located on the coast, for much the same reasons: the littoral provided a lot of different foods, eased transport, and was a much more benign place to be in winter. Besides, moving about during late winter and early spring was risky – at this time, food was scarce, and travel, especially on the stormy southern oceans and flood-prone rivers, particularly dangerous. During this time when almost all the people were gathered together in their communities, stone tools, wooden implements, and hunting and fishing equipment was manufactured or repaired by men, women made and mended clothing, rope, and baskets, and the old moulded the minds of the young.

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129 Williams, "E Paakahia Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 123.
131 Williams, "E Paakahia Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 102; Anderson, The Welcome of Strangers, 117.
Much of the winter diet would have consisted of preserved stored food accumulated throughout the year together with whatever could be gained from local coasts and forests. This was especially true of carbohydrate, obviously; dried aruhe or fern root was perforce the winter source of carbohydrate because kauru could not be stored long and was therefore unavailable. Most of the economically important fishes were unavailable too, since they move offshore in winter to spawn or find warmer water (inshore waters are colder in winter because of the influx of freshwater). Those fish that remained, such as flat fish like flounders and sole, were therefore predominantly late autumn and early winter foods because they could be hunted all year round: the season for taking them was properly from May to August, when large numbers were dried or smoked. Frost fish (*Lepidopus lex*) cast up on the beaches were also a winter food, as their name implies.

Some people from the Peninsula did venture far from home into the cold interior during the depths of winter. Between May and July men, women, and probably children too embarked on expeditions lasting several weeks that travelled up the Strath-Taieri River into the Maniototo Plains to catch the weka and quail that once teemed there. This was because these species were at their fattest then, and because so few other resources were available; the weka were preserved on site, and transported back to Otakou. A hunter would call weka to him by blowing through a strand of the karetu grass; the place name Pipikaretu on the Peninsula commemorates this practice. They would then snare the bird in a noose attached to a pole. This was a difficult and dangerous exercise: many people perished on the snow-laden and wind-swept inland plains.

Forest birds such as tui, pigeon, and kaka were taken from summer onwards, but some methods of taking them took advantage of winter conditions. Tui and kereru, once very

135 Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
138 Beattie, *Traditional Lifeways of the Southern Maori*; Stevens, "The Names Are in the Land, Our History Is in the Land ". However Beattie gives a different name for this practice – whakakeoekeo. See *Traditional Lifeways of the Southern Maori*, 174.
plentiful on the Otago Peninsula, were at their fattest then after feeding from spring to autumn on nectar and then berries; if their feathers were wet they could scarcely fly, and could be shaken or clubbed from their perches. Sometimes on frosty mornings the birds were simply numb with cold and could be easily gathered.\textsuperscript{140} Forest fowling lasted until about August, when it ceased because the birds were in their poorest condition, and were about to mate.\textsuperscript{141}

Shellfish were very important foods found throughout the year around the Peninsula, which provides extensive estuaries, sandy shore, and rocky coast habitats. The large populations of paua (Haliotidae), mussels (Perna canaliculus, green mussel; Mytilus edulis aoteanus, blue mussel), limpets (Cellana sp.), mudsnails (Amphibola crenata), pipis (Paphies australis), and cockles (Austrovenus stuchburyi) were all harvested.\textsuperscript{142} The multitudes of large and flavoursome pink and blue tuaki, or cockles, were especially valued. They were regarded as the principal regional speciality, the mana kai or kai wairua of the Peninsula; it is still seen as an insult to bring tuaki to Otakou.\textsuperscript{143} Though available all year round, tuaki are best harvested in spring, and at particular points in the lunar cycle – at the full moon they are juicy and milky, at the new moon thin and sour.\textsuperscript{144} In addition to being eaten fresh, women gathered great quantities of these and other shellfish from the Peninsula’s estuaries, dried them, and set them aside for winter.\textsuperscript{145}

Spring, koahu, arrived in late August to September\textsuperscript{146}; from this point, as the weather warmed, many species began a flurry of feeding, in order to come into better condition, attract mates and reproduce. People stirred too. The most important local resources they sought were fish. The Otago Peninsula was a primary source of kai moana, food from the sea. Besides shellfish, the mainstays of the southern Maori fishery were pelagic (surface dwelling) fish such as barracouta, red cod, blue cod, ling, and hapuku; all these fish return to inshore

\textsuperscript{140} Anderson, "Mahinga Kai, the Submission of Atholl Anderson," 70; Beattie, Traditional Lifeways of the Southern Maori, 175.
\textsuperscript{141} Dacker, Te Maemae Me Te Aroha, 7; Williams, "E Paakahi Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 169.
\textsuperscript{142} Letter from Herries Beattie, in Roberts, "Unfiled Letters from Front of Correspondence File."
\textsuperscript{143} Williams, "E Paakahi Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 169; Williams, Pers. Comm. 30 September 2007
\textsuperscript{144} Khyla Russell, Pers. Comm. 30 August 2007
\textsuperscript{145} Williams, "E Paakahi Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 171.
\textsuperscript{146} Seasonality based on Ibid., 100. Neither Anderson, The Welcome of Strangers, 117, nor Dacker, Te Maemae Me Te Aroha, 7 provide a name for spring.
waters in spring; thin and hungry after spawning, they come inshore as the weather warms to gorge on the exploding populations of squid, krill, plankton, and small shoaling fish such as pilchards.147

The traditional southern Maori sea fishery was largely concentrated on the coastal waters extending several hundred meters from the shore. There was little need to risk fishing further out over the continental shelf in easily-capsized canoes, because all the reef and bottom-dwelling fish could be caught inshore all year round. However there is some evidence that Kai Tahu sought hapuku, or groper, the largest and most prestigious fish, well out over the continental shelf, where they were found in large shoals. Elsdon Best quoted an Otakou informant (probably H.K. Taiaroa) to the effect that Kai Tahu canoes began to go out to these hapuku fishing-grounds in November or December; the larger ones, destined for the more distant fishing grounds, requiring some thirty men as paddlers, and leaving in the middle of the night so as to reach their destination.148 Yet hapuku were reasonably abundant at Otakou even in the early twentieth century, and it may be that the excellent fishing grounds off Otago Heads (a bay south of the heads was named Te Hapuku (see Figure 7, above) and Cape Saunders, or Poatiri (fish hook) as it was known to Otakou Maori, so close to the edge of the shelf, meant such risky expeditions were unnecessary there.149

The most important southern Maori fishery was for the barracouta. Barracouta were taken as they arrived from spring onwards, but they were in best condition during and after March, by which time they had become much fatter and tastier.150 They were extremely easy to catch from a canoe, using a tackle of rod, line and lure (this was the only species Maori fished using a rod). Simply by thrashing a lure upon the surface of the water, each fisherman might take thousands of fish a day, at a rate of up to four a minute.151

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148 Cited in Habib, "Report on Ngaitahu Fisheries Evidence." Habib notes that while inshore hapuku are scattered; they are only found in concentrated shoals offshore. See Habib, "Ngaitahu Claim to Mahinga Kai."

149 Habib, "Report on Ngaitahu Fisheries Evidence," 229; Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."

150 Beattie, Traditions and Legends of the South Island Maori, 132, Graham, A Treasury of New Zealand Fishes, 313.

The waters off the Otago Peninsula were an ideal spot for barracouta fishing, because its headlands provided both lookouts from which the schooling fish could be spotted, and comparatively calm waters in their lee, meaning the fishermen's thrashing lures were not masked by other surface disturbances.\footnote{Hamel, *The Archaeology of Otago*, 33-34; Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."} The early whaler and settler Haberfield recalled seeing as many as twenty double canoes setting out from the Peninsula settlements to fish for barracouta in a day.\footnote{Habib, "Report on Ngaitahu Fisheries Evidence," 105.} Women dried the great quantities of barracouta caught by the men on stages set out in the sun, and then wrapped them in mats to be stored on whata, the high platforms erected around the villages that protected food from the depredations of pests such as weka and rats.\footnote{Anderson, *The Welcome of Strangers*, 120-21.} The great quantities of dried barracouta formed a staple of the Peninsula peoples' diet, and were an important item of trade.

Amongst other sea-bird eggs sought, Peninsula Maori gathered karoro or black-backed gull (*Larus dominicanus*) eggs from October to January from around the cliff faces facing the ocean from the Heads south to Pikiwhara (Sandymount) up until recent times.\footnote{Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."; C. J. R. Robertson, ed., *Complete Book of New Zealand Birds* (Sydney: Reader's Digest, 1985), 221.} This was a dangerous task much enjoyed by young men as it involved scaling the cliff faces in search of nests defended by flocks of large angry birds. According to Edward Ellison, nests were harvested every other day so that the eggs were guaranteed to be no more than two days old.\footnote{Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."}

Around November the rising of the star Rehua, Antares, heralded the start of Raumati, the summer season.\footnote{Anderson, *The Welcome of Strangers*, 144.} Travel on land eased, and the sea became less tempestuous. And as the weather warmed, many more species became abundant. To take greatest advantage of this the Otakou communities split into small family groups, and most scattered far and wide along the coast and inland. Because of the numbers required to crew canoes, the bulk of this travelling by small groups was on foot, on trails later described as ‘little wider than a sheep track... worn down to a depth of some inches.’\footnote{Murray Thomson, *The Reminiscences of Murray Gladstone Thomson* (Wellington and Dunedin: A. H. and A. W. Reed, 1944).} Maori travelling south from Otakou on foot took a track that crossed to Papanui Inlet, passed over the neck to Hoopers Inlet, and traversed the coast to the Tomahawk hills, whence it skirted the lagoon and then exited onto the sand dunes.
fronting the swampy flats at the head of the harbour. From there the track ran south over the 
intervening hills to the Taieri. A similar track ran to the north from the far side of the 
harbour mouth.

Some of the people from Otakou would already have taken this route to the Taieri Plains, 
where the Taieri River wound a slow way to the sea, and there were many wetlands, notably 
the lakes Waihola and Tatewai (since drained). There they caught whitebait, lamprey, and 
eels, before going fowling for a variety of ducks.

Whitebait are the juvenile forms of several species of Galaxid, fish that move down to the sea 
in autumn to spawn; their young swim back up stream in spring, when Maori caught 
enormous quantities of them in nets, and cooked the bulk of the catch to be stored in kits for 
winter consumption. Today’s white bait fisheries are shadows of the bounty of the past: in the 
nineteenth century Chinese on the West Coast used to mulch acres of gardens with white bait 
inches thick.

Eels were especially vital for all southern Maori, and by far the most common food 
mentioned in the lists they made of their mahinga kai during the late nineteenth century. Their significance is due to the fact that eels are very fatty, rich in energy, and provide all the 
essential fatty acids humans are unable to synthesise; it is actually possible to live on eels 
alone. The first split in the Maori whakapapa of eels is marked by whether they are 
predominantly a fresh or saltwater species. Except for wholly marine species such as the 
conger, eels in New Zealand waters are diadromous—they inhabit both fresh and saltwater at 
various stages in their life-cycles. Maori developed precise and nuanced knowledge of those 
life-cycles, and a great variety of harvested methods that took advantage of them.

Salt-water eels, or lamprey, known to Maori as kanakana, spend most of their lives at sea, and 
only come up freshwater streams once in their lives to breed, in an annual spring migration.

162 Williams, "E Paakahihaki a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 163.
The Otakou people harvested many thousands of kanakana in spring as they struggled to ascend the waterfalls and rapids of the upper Silverstream and Taieri Rivers. So many were taken and sun dried that the bulk of the catch could not be carried, and was floated downstream on mokihi. These were small but buoyant craft of bundled reeds, so easily constructed that they were effectively disposable, but nevertheless capable of carrying considerable weights. They allowed rapid transport of people and goods across lakes, and down rivers. The dried kanakana transported in this way could then be stored on whata at Otakou, and like barracouta were an important trade good.

Freshwater eels teemed all year round in the rivers, lakes, wetlands and lagoons of southern New Zealand. They were a mainstay of the economy of all southern Maori. According to George Habib, '[p]robably more than any other single species, the freshwater eel supported the traditional Ngaitahu lifestyle.' Eels occur much more often than any other resource in the lists of mahika kai made by Kai Tahu in the 1880s.

Science recognises two species of freshwater eels living in New Zealand waters: the long-finned eel (Anguilla dieffenbachii), largely found in rivers and streams, and the much smaller short-finned eel (Anguilla australis), which inhabits ponds, lakes and estuaries. The close attention Maori paid to eels is made clear by the very many names for the different sorts of eels they recognised: well over a dozen names were recorded as in common use in the south, and Elsdon Best listed well over 150 used within New Zealand. These names demarcated first whether the eel was predominantly a fresh or saltwater animal, and then its type, marking shape, habitat and edibility.

Southern Maori were almost always on the way to somewhere, and eels were absolutely crucial to travelling parties shifting long distances through difficult, rugged, often mountainous terrain. Unless able to boat downstream on a reasonably benign stretch of water,
travel meant walking. Foot travel in the mountainous and often densely forested terrain of southern New Zealand is essentially confined to ridgelines (where there is little or no food) riverbeds, or lake margins. Waterways were therefore the arterial veins along which travellers almost always moved, and eels were easily the most plentiful, reliable, sustaining and tasty fare to be found there. The early European travellers exploring the south were often kept alive only by Maori guides relying predominantly on eels gathered as they went.172 Southern Maori used many methods to catch eels as they travelled, including hi or bobbing, rapu or tickling (much as one can catch trout), or by using a multi-pronged spear known as a matarau (a method still used today).

Freshwater eels were never plentiful on the Peninsula, which lacks rivers or lakes, and this was its greatest disadvantage as a location in Maori eyes.173 Yet eels were still very important to its inhabitants. Aside from their primary eel fishery on the Taieri, eels were also gathered locally, from creeks draining into Otago Harbour — such as the Kaituna (now dried up); another favoured spot was the Kaikarae estuary south of Dunedin.174

Plant foods became increasingly important over spring and summer. Tutu berries and flax flowers were among the first summer foods to ripen.175 Though the seeds in tutu berries are highly toxic (once famously killing an escaped elephant in Dunedin), southern Maori made a nutritious and by all accounts delicious drink from the berries after carefully straining the seeds out through fine flax cloth.

The first ceremonies associated with the production of kauru were held in October, and initial cuttings were made from then until December, and again in the autumn, after which gardening ended.176 Edward Shortland noted preparing kauru as occupying most of a village from December to January.177 There are signs Maori had effectively begun to cultivate ti. The potential for cropping methods to develop around ti is clear, for the plant regenerates easily. According to Tikao, when the root and stem was taken for kauru, the root tip and terminal shoot would be re-planted, therefore harvesting a tree generated two clones. Thus groves of ti

173 Letter from Herries Beattie, in Roberts, "Unfiled Letters from Front of Correspondence File."
174 Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
176 Ibid., 145.
177 Williams, "'E Paakahi Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 195.
developed, many of whose qualities were artificially selected for by the particular hapu possessing sole rights to them. Kaihaukai, large feasts where hapu hosted one another to cement ties and demonstrate generosity, were especially strongly associated with celebrating the harvest of kauru, largely because kauru could not be stored long, and was produced in large amounts at periodic intervals of some years.\textsuperscript{178}

At least while they were still available on the Peninsula, seals and to a lesser extent kake, the female sea lion, remained important food resources.\textsuperscript{179} However, it is not entirely clear how they were incorporated into the seasonal round, and the evidence for the hunting strategies Maori employed is limited. The archaeological data suggests that while breeding seal colonies remained, people probably continued to camp close by during spring and summer in order to crop animals for immediate consumption.\textsuperscript{180} On the basis of Simmons’ excavations, Smith concludes Little Papanui (‘Papanui Beach’ in Smith’s terminology) was such a camp.\textsuperscript{181}

According to Smith the historical record suggests a different hunting strategy, one of seasonal expeditions to take seals, geared towards preservation of the animals for later consumption, and focused on pups and juveniles.\textsuperscript{182} Smith notes that in the late nineteenth century, Tame Parata informed F. Chapman that his ancestors from the Otago Heads area used to make annual expeditions over to Cape Saunders to catch young seals.\textsuperscript{183} Other records Smith does not note also tend to substantiate Smith’s conclusion young seals were increasingly taken in seasonal expeditions. Shepherd for example noted ‘young seal’ in the diet of Foveaux Strait Maori in 1826.\textsuperscript{184} The earliest records compiled by Maori date from 1880, when hui produced a series of lists of mahinga kai to identify the food and resource gathering places that ought to have been reserved in the wake of the land sales. These lists collectively detail

\textsuperscript{178} Ibid.
\textsuperscript{179} Place names and oral testimony suggest sea lions were sought at the mouth of Papanui Inlet. See Michael Stevens, "The Names Are in the Land, Our History Is in the Land " (B.A. Dissertation, University of Otago, 1976), Edward Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)," (Hocken Library, n.d.).
\textsuperscript{181} Ibid.
\textsuperscript{182} Ibid.: 675-77, 83-85.
\textsuperscript{184} Una Shepherd Price, My Family of Shepherds (Scone (NSW): Privately Published, 1988), 23 March, 17.
114 resources found at over 1700 locations.\textsuperscript{185} These do not list the mainland Peninsula mahika kai, but one list refers to seven islands inside the Harbour and around the Peninsula 'never sold to Wakefield'; of these three, on the outer coast, harboured seal colonies.\textsuperscript{186} Other places on the Peninsula are also cited in the historical record: in 1893 Tare Wetere Te Kahu told Chapman that Harekeke, the true 'Seal Point', was 'where seals were got'.\textsuperscript{187} In the early 1920s one of Herries Beattie's informants (probably less reliably) said that seals were harvested from a breeding colony at the Heads themselves.\textsuperscript{188} Finally Edward Ellison, in evidence before the Waitangi Tribunal, recorded that kake (the female sea lion) was sought after from December to May as also was the whakahao (male sea lion). A favourite site for the whakahao was around the mouth of the Makahoe (Wickliffe Bay) where 'small parties of people' would kill the animals and cook the meat in large umu on the edge of Okia Flat, carrying the cooked meat back to the villages at Otakou.\textsuperscript{189}

Smith concludes the evidence clearly suggests a significant shift in strategy occurred from seasonal cropping for immediate consumption to expeditions to preserve food. He attributes this shift to the impacts of European sealers, which meant seals could only be found in remote localities.\textsuperscript{190} This is plausible, though of course preserving fatty seal meat was a sensible strategy regardless of where seals where available, for winter was the critical period when fat was most needed.\textsuperscript{191} The emphasis on preservation is documented by Captain Edwardson, of the \textit{Snapper}, one of the first Europeans to provide an historical account of Maori life in southern New Zealand. He noted that during the 'fine weather season' seals were killed, and then smoked and preserved whole in poha for winter consumption.\textsuperscript{192}

\textsuperscript{185} Williams, "E Paakahi Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 154.
\textsuperscript{186} Ibid; Habib, "Ngaitahu Claim to Mahinga Kai," 3. Chasland also pointed out islands off the Otago Peninsula as being places where seals were harvested.
\textsuperscript{187} F.R. Chapman, "Notebook Entitled 'Gazetteer, Maori Names, South Island'," (Hocken Library, n.d.).
\textsuperscript{188} Beattie, \textit{Traditional Lifeways of the Southern Maori}, 156.
\textsuperscript{189} Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)." Place names on either side of the estuary mouth confirm such practises. See Stevens, "The Names Are in the Land, Our History Is in the Land ".
\textsuperscript{190} Smith, "Historical Documents, Archaeology and 18th Century Seal Hunting in New Zealand," 685-86.
\textsuperscript{191} Williams, "E Paakahi Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 68-69; Leach, \textit{Fishing in Pre-European New Zealand}.
\textsuperscript{192} Anderson, \textit{The Welcome of Strangers}, 67. Tikao also reported to Beattie that seals were cooked whole in their skins. Smith notes that by his own admission Tikao knew little about seals, and considers this method 'rather unlikely'. He believed it more likely that seals were butchered and cooked in an earth oven, as also recorded by Beattie, and Ellison. Smith, "Historical Documents, Archaeology and 18th Century Seal Hunting in New Zealand," 677.
Poha were a novel solution to the storage problems unique to the south (elsewhere in New Zealand, as in Polynesia, gourds and coconuts provided storage containers). They were made by inflating blades of bull-kelp (*Durvillea Antarctica*) to form large bags. These were swathed in strips of totara bark, and mounted on a harness that allowed them to be carried somewhat like a backpack. Poha were of various sizes, and could be very large, up to 8 feet high, and contain 150 birds (though more usually about 50). As Shortland noted, they performed the function of casks, and were generally used for preserving birds, usually weka or titi, though any flesh, including seal, dog, or human, might be safely kept in this way for some years. They were absolutely critical to the development of Maori life in the south, because only after this development could Maori preserve, store, and therefore trade fatty foods. Though most explanations stress population pressure as the reason Kati Mamoe moved south, some traditions state that Kati Mamoe were drawn by the delicious taste of the delicacies preserved in poha sent north by Waitaha in trade. This indicates not only that trade between disparate and far-flung groups was a feature of even early life, but the key role poha played in fostering trade. Shortland also noted the long-distance trade in goods, both along the South Island’s eastern sea board, and across Cook Strait, in which southern Maori sent kauru, titi, kotuku (white heron) feathers, and taramea oil (used as scent) north, and received preserved kumera, canoes, and mats in return.

Ducks and shags were taken in large numbers from Otago Harbour and the inlets of the Peninsula, and were another principal focus of the expeditions from the Peninsula onto the Taieri. They were best hunted during December and January for in these weeks of their summer moult they could not fly. Parera (Grey duck), Kukupako (Black teal), Pateke (Shoveller duck) and Tete (Shoveller duck) all flocked in large numbers to the plain, drawn by the extensive wetlands, lakes, and lagoons created by the Taieri as it wound a slow

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193 Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
197 Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
passage to the sea. The helpless waterfowl were then driven into snares or yards at the water’s edge, each hapu having their own yard.\textsuperscript{198}

Birding for the honeyeaters tui, kaka, and bellbird also commenced in about January and continued through till July.\textsuperscript{199} These birds primarily feed on nectar through late winter and early spring, before switching to soft berries and insects in late summer and autumn.\textsuperscript{200} All of these birds were plentiful on the Peninsula.\textsuperscript{201} According to Alfred Reynolds, an early European settler and notorious curio hunter (writing, as he often did, under the pseudonym Aparata Renata): ‘[t]hey started on the kowhai (\textit{Sophora microphylla}). Some of these trees flower in June and July but most of them in September. Then they had the fuchsia and native flax. These three are all the honey flowers suitable for honey-birds’ food on the Peninsula, as no rata ever grew on it.’\textsuperscript{202} After the birds had fattened on sweet nectar, and finished laying their clutches of eggs, Maori began to snare them at water troughs, or used spears made of a number of jointed sections that could be connected in varying combinations. This allowed the hunter to quickly construct the very long weapon that might be needed on site – stalking birds while carrying long poles in dense and vine-entangled forest is not very feasible.

Ngahuru, or autumn, the fourth and final season in the southern Maori calendar began at the rising of the star Whaanui, or Vega. Several important inland foods came into season around this time. Kiore were sought from the interior from about March to July, when they were much more plentiful and tasty, and easily snared at night on their little tracks moving about in search of berries.\textsuperscript{203} Kiwi and kakapo were also caught inland throughout late summer and early autumn.\textsuperscript{204}

The final two seasonal events discussed here were of paramount importance. First, at the new moon in late March or April an annual event begins to which all Southern Maori devoted

\textsuperscript{198} Williams, "E Paakahi Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 144; Beattie, \textit{Traditional Lifeways of the Southern Maori}, 505; Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
\textsuperscript{200} Robertson, ed., \textit{Complete Book of New Zealand Birds}, 289-90.
\textsuperscript{201} As attested by numerous early European observations (ie Monro, Shortland, the whalers’ accounts, Renata, and Maori tradition.
\textsuperscript{203} Beattie, \textit{Traditional Lifeways of the Southern Maori}, 510-11.
\textsuperscript{204} Williams, "E Paakahi Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 164.
great attention: the annual migration of fresh water eels down to the sea. During this autumnal migration, or heke, Maori congregated at their favoured rivers and lagoons, to construct pa tuna, eel weirs of brush or stone built out from the rivers' banks. Hinaki, tubular nets made of vines and flax, were set into the weirs, and the eels flooding downstream had little choice but to enter them.\textsuperscript{205} Similar nets, known as kaitara were used throughout the year, but outside the heke they needed to be baited to persuade the eels to enter.\textsuperscript{206} Enormous quantities of eels could be preserved by drying in the sun and wind, and kept for winter consumption.\textsuperscript{207} According to Jim Williams, the people came to discern a pattern to the heke. Male short-finned eels migrate first, followed by the females. They are still arriving as the long-finned eels, first males and then females, begin. He states that once the larger long-finned females began to arrive, the channels were closed off, allowing these, the largest animals, to pass freely to the sea. He notes that a long-finned female eel one meter long has some three million eggs, while a 1.5 meter female has 30 million eggs. He argues that the biological knowledge developed by southern Maori is exemplified by the fact that their hunting selection favoured males and ensured that the most important individuals were left free to breed.\textsuperscript{208} Another example of Maori awareness of the cycles that governed their environment is that drying eel was never hung out under the moon, for at that time a saprophyte is activated that turns the flesh rancid. Such knowledge was referred to as maramataka – moon knowledge.\textsuperscript{209}

Second, shortly after the tuna heke ended the titi season commenced. Titi or mutton birds are the plump chicks of the Sooty Shearwater (\textit{Puffinus griseus}) that still breeds in great numbers on the small rocky islets scattered through Foveaux Strait. By the nineteenth century, if not before, titi had become a crucial resource: they were almost as important as eels as a source of fat and protein available over winter, and were without parallel as a prestige food item of trade. People from as far afield as Kaikoura (and possibly even Taranaki) made extremely long and hazardous return journeys to and from the far south to harvest them and sustain their rights to the islands.\textsuperscript{210}

\textsuperscript{205} Beattie, \textit{Traditional Lifeways of the Southern Maori}, 143-45, 316-26.
\textsuperscript{206} Ibid., 146.
\textsuperscript{207} Ibid., 144.
\textsuperscript{208} Williams, "E Paakahi Hakinga a Kai' an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 223.
\textsuperscript{209} Ibid., 106.
\textsuperscript{210} Ibid., 200.
Some of the people from the Peninsula manufactured quantities of poha (collecting the kelp from about Cape Saunders, and southwards about the Clutha coast, as well as stripping totara bark from Peninsula trees).\textsuperscript{211} Others made annual journeys to harvest titi, as attested by tradition, and also by the early historical record; Kent in June of 1823 and Herd in March of 1826 both encountered a principal Kai Tahu chief of the Peninsula Taiaroa with his people on Stewart Island where they went sealing before concentrating on titi.\textsuperscript{212} The makers of poha were of course rewarded when these people returned from the islands, each of which was allocated for the exclusive use of a specific ancestral group.

Titi were so valued because they were an abundant, tasty and very nutritious source of fat and protein that could be efficiently packed in poha and preserved. Up to two or three hundred thousand birds were being taken each year in the early nineteenth century.\textsuperscript{213} Great quantities of them were traded, some even sent across Cook Strait in exchange for resources lacking in the south.\textsuperscript{214} The close of the titi season at the end of May signalled the end of major expeditions for the majority of the Peninsula people, and once more they congregated at home for winter. This returns us to our starting point, and completes the survey of the yearly food gathering activities.

The ways in which these species were harvested illustrates important aspects of southern Maori tenure to resources. Many species’ habitats, such as those of kiore, ducks (when in moult), kiwi, or shell fish, were divided into family preserves. These were named wakawaka, a word derived from the discrete sections of the tail of the piwakawaka, the fantail, and which, radiating outwards in parallel bands from a central point, mirrored the traditional land divisions found throughout eastern Polynesia.\textsuperscript{215} These species were either distributed in ways (such as cockles, found in patches) or were taken in ways (such as rats and birds taken in snares, or eels when taken in traps or weirs) that made competition for resources highly

\textsuperscript{211} Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
\textsuperscript{212} John Rodolphus Kent, "Journal of the Proceedings of His Majesty's Colonial Cutter Mermaid from the 8th Day of May to the 15th Day of August Inclusive," (Hocken Library, 1823), 39; Anderson, The Welcome of Strangers, 68.
\textsuperscript{213} Williams, "E Paakah Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 205.
\textsuperscript{214} Shortland, cited in Ibid., 112.
\textsuperscript{215} Atholl Anderson has provided the clearest exposition of the possible distinctions between wakawaka and mahinga kai. See Atholl Anderson, "Mahinga Kai, the Submission of Atholl Anderson," (Hocken Library, n.d.); Anderson, Wakawaka and Mahinga Kai, 631-40. Also Williams, E Pakinga a Kai, 120.
inefficient. Control over discrete wakawaka ensured each family’s access to the resource and, from the point of view of the wider community, ensured efficient harvesting, by eliminating duplication of effort.

Other resources such as weka were fairly ubiquitous all year round in many areas, and accordingly there were no restrictions on weka harvesting. Aruhe was also fairly widely distributed and fern root grounds were generally not strictly divided, only the most senior families reserving the very best fern root grounds. Rank thus provided another mechanism for ecological control. Kiwi, for example, were especially prized, largely for their feathers, and only the aristocracy were permitted to hunt them: for a common man to deliberately kill a kiwi meant death without reprieve.

In sum, it is important to realise that the territories for one species would not be the same as those for another. Rights of one group to take kiore might overlap with those of another for taking weka in time and space. Each group would be aware of the rights of other groups in that area to another resource, and not interfere with the conditions required for that resource. Property rights, in other words, were closely adapted to ecological use. This system provided the essential prerequisite for management of resources with a view to the future, and shaped new relationships between Maori and their environment.

4.7 The Evolution of attitudes towards the environment

The central argument of this section is that southern Maori came to closely regulate the ways resources could be obtained. The primary purpose of control was to ensure the maintenance of ancestral rights to property and tenure of resources, but this also provided the means and motive for resources to be managed in a more sustainable way. The titi harvest provides a fine example. The titi season commenced in about mid March and engaged the undivided attention of those hapu lucky enough to have access rights to a colony for almost three months, till the end of May. Though several colonies existed on the Otago Peninsula, the most important resource was (and is) found on the titi islands of Foveaux Strait. A rahui or

216 William Cronon notes Indians in New England developed a very similar system of property rights, and there too similar differences emerged between Indians able to practise agriculture and those who sustained themselves by hunting and gathering. See Cronon, Changes in the Land, 60-64.
217 Beattie, Tikao Talks, 139.
218 Williams, E Pakinga a Kai, 230.
219 Ibid.120.
prohibition that forbids people to visit the islands outside the rigidly defined season has been long established and a clear series of strict protocols still governs behaviour on the island: no fires are lit outside, no living wood is cut, and no damage to the ground or the burrows from which the chicks are plucked is permitted. During the season, only those hapu with clearly defined rights to preserves are permitted on any particular island. These preserves were and are defended vigorously against any intrusion. Thus Maori imposed strict controls that restricted access to a critical resource to a clearly defined group of people, defined use in both time and space, and governed how it could be used. 220

Access to titi was so strictly controlled because they were so important, and because they were only abundant in very specific places at specific times. But most other resources also had their own management regime proscribing who had a ‘take’ – a right to take – and when and where it could be exercised. Some species could not be taken at particular times, usually when breeding, or when in poor condition, others were never taken from particular tapu places at all. According to local kaumatua (elder) Huata Holmes, the waters of the Leith, Owheo, were such a place. 221

Control is the essential prerequisite for care, as is seen in the way shellfish beds were maintained. These were carefully allocated. Boyd Russell claimed before the Waitangi Tribunal that shellfish beds at Otakou were always strictly divided into wakawaka:

the wakawaka in the harbour were demarcated by stakes driven into the bottom down to and just below the low tide level. Mr Russell remembered seeing stakes in a line running out to sea from the Otakou and Te Rauone Beaches during his own lifetime. Certain wakawaka belonged to specific whanau. Mr Russell is known in the district for attempting to maintain his family’s once exclusive right to a certain area of shellfish near his house. 222

Whenever the key resources were distributed fairly uniformly across the landscape, such territorial division made sense. 223 Thus this pattern was much more common in the more heavily populated Canterbury, where the flat plains provided fairly consistent habitats, than in the diverse landscapes of Murihiku. Atholl Anderson has distinguished regionally differentiated systems controlling access to and rights over resources on that basis. Anderson

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220 Ibid., 204-5.
221 Ibid., 144.
222 Ibid., 158.
223 A 1984 survey of Papanui Inlet estimated the cockle population at 820 million, while in Waitati Inlet there were almost 2 billion cockles. Cited in Habib, "Report on Ngaitahu Fisheries Evidence," 157.
differentiates the ‘wakawaka model’, whereby different hapu or whanau had exclusive control over a large area containing a number of different mahinga kai, which obtained in Canterbury, from the ‘Mahinga Kai’ model, where groups had exclusive rights to portions of particular resource patches spread over a very large territory, which obtained in Murihiku.\(^{224}\) Though there was almost certainly no sharp geographical demarcation between these systems, it is clear that the Otago Peninsula was too diverse a landscape to be easily divided into separate territories, and individual patches of resources were instead allocated in the pattern associated with Anderson’s mahinga kai model.\(^{225}\)

Whatever the case, the key point is that access to resources was closely regulated within Maori society. This provided the crucial prerequisite condition for care for the future, and conservation of the resource. There is no need to invoke an ethic of conservation to understand why Maori may have come to control how and when they used what they had identified as important resources. The context of ensuring their own survival meant sustainable use made very pragmatic sense.

According to Maori, resources were not simply sustained, but also enhanced. Measures were taken to ensure the productivity of the sea, including the maintenance and development of maara maitai, or seafood gardens. Peter Ruka states his tupuna would introduce a predatory whelk into pipi beds that had become too densely populated, to thin out the beds, and allow the pipi to grow fat.\(^{226}\) According to Rakihiia Tau and Peter Ruka, among others, superior strains of shellfish were spread along the coasts; cockles from Otakou, for example, were spread to Ihutai, at Heathcote Estuary.\(^{227}\)

The old ones would collect their favourites and place them into poha, these poha would be punched with holes and buried in the 3\(^{rd}\) and 4\(^{th}\) wave line at low tide or placed carefully on the rocks or in crevices where the wave pressure would gradually disperse the eggs over a period of time...\(^{228}\)


\(^{227}\) Williams, "E Paakah Hakinga a Kai an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 137.

\(^{228}\) Ibid., 138.
The holes were punched into particular patterns, such as the constellation Matariki, which Jim Williams believes acted as signs of ownership.\(^{229}\) Williams argues strongly that these sorts of measures reflect the fact that through long association and use people came to understand and care for their resources: ‘There was no ‘green for green’s sake’ ethic but, rather, a focus on species which were seen to be of value...’\(^{230}\) There was also considerable effort made to enhance especially important habitats, such as the lagoon Waihora, now Lake Ellesmere. This was periodically opened to the sea every few years to flush out sediment build up and increase fish populations; this was a substantial and organised operation for ohu, or working bees, that involved fifty to one hundred men.\(^{231}\)

Maori developed deep spiritual ties to the places of their ancestors, whose resources were theirs by virtue of ancestral connection. They came to see themselves as the kaitiaki, or guardians of these places, whose mauri or life force it was their responsibility to maintain. Jim Williams explains that

> To do so means one must be in tune with the mauri [spiritual life force] of that which is being protected. This means being linked by whakapapa with the resource and its atua (from whence the mauri emanates). It involves respect for its tapu and upholding its mana.\(^{232}\)

Thus tradition records that several interlinked concepts governed the use of resources and the relationship of Maori with their world. These concepts defined the moral universe of the Maori, whose laws were upheld by their priests, or tohunga. These men were specially selected from an early age, subjected to intensive and rigorous schooling, and became the essential repositories of their peoples’ knowledge.\(^{233}\) Their catalogue of experience provided the basis for sound conservation practices ‘as expressed through habitat enhancement, population improvement and what may be termed sustainable harvesting.’\(^{234}\) Maori awareness of the need to preserve resources should not be surprising; it was generated by the experience of their loss and the knowledge that New Zealand was the end of the line: ‘their

\(^{229}\)bid., 138-39.
\(^{230}\)bid., 136.
\(^{231}\)bid., 132.
\(^{232}\)bid., 79.
\(^{234}\)Williams, "E Paakah Hakinga a Kai: an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu", 229.
500 years of experience shows they fully understood that there is no survival without sustainability.\(^{235}\)

### 4.8 Environmental effects of Maori life on the Peninsula

The questions of what environmental effects Maori had after the initial impact of settlement, and why, open up crucial differences between the explanations of Maori tradition and European science, headed by archaeology and supported by ecology. Atholl Anderson succinctly summarises the standard archaeological position:

> within their social rules of resource ownership and use, pre-European Maori operated as optimal foragers, exploiting natural commodities in ways that expended the least effort for the greatest return to promote the comfort and development of individuals and lineages, without consideration for distant communities or the sustainability of any particular resource.\(^{236}\)

Therefore, claims Anderson, ‘resources diminished or disappeared in proportion to their desirability and their vulnerability’.\(^{237}\) In this somewhat ahistoric view, the fact that the rate of extinctions fell over time simply reflects the fact that the most vulnerable species had already succumbed. However archaeology says little about the environmental effects of Maori life in southern New Zealand after the initial impacts of settlement, other than general suggestions such as that the more vulnerable fauna on land continued to diminish, and that the size of marine specimens observed in middens reduces over time.\(^{238}\) For example, in the 1840s it was noted that Maori valued kakapo feathers very highly, and were now forced to conduct expeditions into Fiordland to retrieve them. However, by this time predators introduced by Europeans, then thought to be feral dogs, but in fact perhaps more importantly rats, were already taking a toll of New Zealand’s fauna, and they may have been largely responsible for the regional extinction of such slow-breeding, defenceless birds.\(^{239}\)

Another important environmental impact argued for by archaeologists is a continued contraction of the breeding range of fur seals. According to Ian Smith, by the 1790s when European sealing commenced, Maori cropping had reduced fur seals to breeding only about

\(^{235}\)David Young, *Our Islands, Our Selves* (Dunedin: University of Otago Press, 2004), 56.


\(^{237}\)Ibid.

\(^{238}\)See for example Leach and Boocock, *Prehistoric Fish Catches in New Zealand* 30; Leach and A. Boocook, "The Impact of Pre-European Maori Fishermen on the New Zealand Snapper, Pagrus Auratus, in the Vicinity of Rotokura, Tasman Bay." *New Zealand Journal of Archaeology* 16 (1994).

Foveaux Strait.\textsuperscript{240} He argues that while regular cropping associated with breeding colonies persisted about the Peninsula at least until fairly late in the seventeenth century, because seasonal cropping was not reported by early Europeans it must have ceased by the late eighteenth century.\textsuperscript{241}

However historical records suggest the possibility seals may have still been breeding about the Otago Peninsula in the early nineteenth century. Several sealing vessels visited the Peninsula between about 1806 and 1810. At least one dropped working gangs on the Peninsula, while two thousand skins were taken from the very small 'Isle of Wight' off the Otago coast just south of the Peninsula by a few men over some weeks in the summer of 1809-10 – during the breeding season.\textsuperscript{242} Seals probably persisted on the Peninsula for much the same reasons as they did further south – because of the small Maori population, the large seal population, and the difficulty in accessing some areas of the Peninsula’s coast.

Their persistence might yet also be due to Maori harvesting ‘their’ resources increasingly strategically.\textsuperscript{243} The evidence for actions and attitudes consistent with strategic harvesting is comprehensive in respect of many species. As Edward Ellison said of his people’s practices: ‘Strict tapu was placed on all kai [food] at certain times of the year. This was strictly adhered to as were the rohe potae pertaining to the various hunting ground. Atua or protective gods were incorporated in the maintaining of these tapu. [The] [p]rincipal reasons [were] so as to assure that a resource was not overexploited.’\textsuperscript{244}

Archaeological evidence throughout New Zealand suggests Maori and seals did not long co-exist, yet there is some evidence for selective hunting. As with many of their food species, Maori focused their hunting on the young, which (being proportionately fatter) tasted much better than adult meat. Age-selective hunting is effectively cropping; if the take is not too

\textsuperscript{240} I.W.G. Smith, "The Exploitation and Cultural Importance of Sea Mammals" (paper presented at the 9th Conference of the International Council of Archaeozoology, Durham, 2002), 10.


\textsuperscript{243} For broader treatments of Maori as sustainable managers, see Williams, "E Paakahi Hakinga a Kai’ an Examination of Pre-Contact Resource Management Practice in Southern Te Wai Pounamu”, Alan Clarke, The Great Sacred Forest of Tane, Te Wao Tapu Nui a Tane: A Natural Pre-History of Aotearoa New Zealand (Auckland: Reed Books, 2007), Young, Our Islands, Our Selves, 38-56.

\textsuperscript{244} Ellison, "Mahinga Kai: Evidence of Edward Ellison (Otakou)."
flagrant, breeding populations can be maintained. Atholl Anderson, in arguing for the economic efficiency of Maori as 'optimal foragers' adds a crucial cautionary clause: economic efficiency was only applied 'within the social rules of resource ownership and use'. Maori 'social rules', as we have seen, increasingly stressed the careful preservation of resources for use by their future owners – the direct descendents of the current generation.

The single key social construct throughout all Maoridom was the sustaining of the power and prestige of particular lineages' associations with land. Land was the foundation of social and economic life. Individual identity as defined within iwi, hapu, and whanau was mapped out in the places in the past, and therefore in the land, where a person’s people had lived and died. Being bound to that land obviously involved sustaining the resources on which lineages therefore depended. Thus whereas Anderson argues simply that all Maori, throughout the pre-European period, exploited resources without regard for ‘the sustainability of any particular resource’, it would seem that once all prime resources were allocated to competitive lineages, each had a deep vested interest in maintaining their own. Anderson rightly critiques those who ‘compress Maori environmental behaviour into an ethnographic present defined by historical snapshots of ‘rahui’ and other forms of resource management’. But we should be just as wary of refusing to acknowledge the many ways in which Maori sought to conserve what they needed for their future.

Acknowledging the inevitability of early environmental impacts by the Polynesian settlers does not preclude a focus on the gradual successes of Maori adaptation to their environment. And their attitudes to resources were not simply economic responses to conditions of scarcity. The lives of the people who did live here were not wholly at the mercy of, or simply determined by, environmental forces. They could and would uproot entire settlements because of the death of a chief, not merely because food had become scarce.

4.9 Conclusion

Maori culture developed from the lifeways brought by their migrant Polynesian ancestors; the forms it took were shaped by the relationships between people and place, human and


landscape. The early settlers came prepared to follow a long established way of life, in which they identified the most accessible resources, plundered them, and then moved on. Southern New Zealand was however the end of the line: there was nowhere to move on to. Many species were initially extirpated by humans and by kiore; the disappearance of the larger avifauna on the Peninsula can be clearly attributed to the direct impact of human hunting activity, while the reductions in colonial seabirds and (most obviously) the reptile and insect fauna, were due to the introduction of kiore. There should be no question of blame here: even where people were the primary agents of extinction they had little control over such processes; some extinctions were too quick to prevent, others too slow to perceive. Yet as a result, the people who inhabited this landscape over the succeeding centuries learnt, not only to live within the limits set by the environment, but to also improve their world, dwelling in a landscape of their own making.

In some respects the initial impact on the Peninsula was less severe than in most other areas of the south-eastern coast: there is no good evidence that Maori chose to clear any more than small patches of forest on the Peninsula; seals survived to breed there far longer than anywhere further north. As Atholl Anderson puts it, 'the environmental encounter ran in both directions. The growth of Maori society from Polynesian roots owed as much to the constraints and opportunities of the New Zealand environment as the latter was changed by it.'

Maori learnt from bittersweet experience. Maori social structures were mired in, and mirrored by, ownership of the people's lands and resources. They developed sensitive and largely sustainable management practices that ensured access to the resources their communities required. Maori overcame the inevitable impacts of initial settlement, and learnt to live within the temperate climate of the Otago Peninsula. As David Young has likewise concluded, 'their 500 years of experience in these islands shows they fully understood that there is no survival without sustainability.'

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247 Ibid., 21.
248 Young, Our Islands, Our Selves, 56.
Takata Pora: the world washes ashore

The seed of life is rotten now
The gods have doomed us to perish\textsuperscript{1}
Anonymous Kai Tahu

\textsuperscript{1}Bill Dacker, "He Raraka a Ka Awa," (Hocken Library, 2000), fn 34, 47-48.
Chapter Five
European Exploration, Maori Discovery
First Contacts 1770-1817

‘How powerful must be the love of gain, when it can induce men to support the fatigues and privations which fall to the lot of the seal fishers!’ Jules de Blosseville

5.1 Introducing the Otago Peninsula to the world

On 25 February 1770 on his first voyage to New Zealand, James Cook sailed south along the Otago Coast, and hove to for the night off a headland whose position he fixed, and which he named Cape Saunders. This was the first glimpse Europeans had of the Otago Peninsula. In the morning Cook could see aspects that interested him, where ‘the Shore seemed to form 2 or 3 Bays wherein there appeared to be good Anchorage & Shelter from SW, Westerly & NW winds’. Although tempted to investigate the prospects of safe harbours, Cook was spurred by the desire to finally settle whether this was the Great Southern Continent or, as he already suspected, only an island. He decided to sail on. Cook described the coastal land as ‘green & Woody’. Not far south of the Peninsula on 4 March, he noted sightings of several seals and whales, neither of which had been seen off northern coasts. In the night both Cook and Joseph Banks saw a large fire on shore;

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3 Jules de Blosseville, ‘Nouvelles Annales des Voyages,’ extracts reproduced (in English) in Robert McNab, Murihiku and the Southern Islands (Invercargill: William Smith, 1907), 199-228. De Blosseville’s account of southern Maori and of sealers is based on information provided by Captain Edwardson of the Snapper in 1823. Quotation 220.
5 Ibid.
6 Cook, 4 March 1770, quoted in Ian Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839 (Dunedin: Friends of the Hocken Collections, 2008), 15.
both believed as a result that there were people here, ‘though probably very thinly scattered over the face of this very large country’. 6

Cook never landed here, but his observations – of seals, whales, the possibility of safe harbour, and the scarcity of inhabitants – eventually brought the world to the Otago Peninsula. The charts and the journals he and his officers kept were the first historical records of most of New Zealand. For all seamen and merchants, especially in Australia, they remained a constant source of reference for a very long while – the first Scottish settler ships to arrive, the *John Wickliffe* and *Phillip Laing*, still relied entirely upon Cook’s cartography in 1848. 7

Cook looked at a landscape in search of specific commodities. As instructed, he tried very hard to foster trade with Maori, and on return tried to provide precisely the information essential to commercial exploitation. 8 New Zealand’s isolation was a formidable obstacle to commerce, partially overcome by the decision to site a penal colony at Port Jackson (Sydney, Australia), one reason advanced for which (by Joseph Banks especially) was the possibility of thereby exploiting New Zealand’s flax and timber. 9 Imperial ambivalence over establishing an economically self-sufficient jail hampered the colony however, and it had acute economic problems, especially an abject dependence on Calcutta, principal port of British India, for supplies of basic necessities.

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7 Cook’s charts did not show Otago Harbour of course, and this sometimes caused captains considerable trouble. In 1855, for instance, the *Gil Bias*, a ship carrying immigrants from Melbourne and relying on Cook’s charts, spent eleven days searching for the harbour entrance. See Thomas. M. Hocken, *Contributions to the Early History of New Zealand [Settlement of Otago]* (London: Sampson Low, Marston & Co., 1898), 159.

8 The acute awareness of the links between exploration and commercial exploitation are a recurrent theme in the instructions to Cook on all three voyages and in his reports. For instructions, see Anne Salmond, *Two Worlds: First Meetings Between Maori and Europeans 1642-1772* (London: Penguin, 1991), 99; Robert McNab, ed., *Historical Records of New Zealand*, vol.I (Wellington: Government Printer, 1908), I, 24-28.

9 The importance of New Zealand’s flax and timber resources were stressed by Joseph Banks and his followers. In the eventual ‘Head’s of a Plan’ which laid out the ‘plan for effectually disposing of convicts’, New Zealand’s flax and timber are the only two commodities singled out as significant economic resources that the colony might furnish the Empire. See James Maria Matra’s Proposal and ‘Heads of a Plan’ in McNab, ed., *Historical Records of New Zealand*. 
like food, livestock, and tea, as well as luxuries—‘china’, fine furniture, and fashionable clothing.\(^{10}\)

The British merchants operating out of India obviously wanted return cargoes too, but as New South Wales’ Lieutenant-Governor Gidley King lamented in 1803, ‘we possess no known staple whatsoever’.\(^{11}\) This was not quite correct. Sydney merchants had already found that Chinese demand for soft, warm seal skins could make them a profitable commodity, given the relatively cheap cost of outfitting a sealing vessel (perhaps £2500).\(^{12}\) Seal oil, especially clean-burning and odourless elephant seal oil, soon found a ready market too, for amongst very many uses, animal oils lit the cities and lubricated the machines of Europe and America.\(^{13}\)

Thanks to Cook and the explorers who went to Dusky Sound in his wake, colonial merchants could anticipate finding there a safe charted harbour, providing timber, fresh food, potable water, and seals such as those Cook had killed for meat, rigging repairs, and lighting oil.\(^{14}\) In 1792 the \textit{Brittania} (a ship with a rare license from the East India Company to operate in these waters en route to Canton) deposited the first sealing gang employed in Australasia in Dusky Sound. They had little luck and their reports discouraged others.\(^{15}\) Australian sealing only developed after 1798 when Gidley King was provoked into encouraging a colonial industry by American exploitation of the newly discovered Bass Strait fur seal rookeries. Yet in only five years these rookeries were virtually exhausted, and Sydney sealers then looked to New Zealand’s offshore islets and coasts once again.\(^{16}\)


\(^{13}\) McNab, \textit{Murihiku and the Southern Islands}; Rhys Richards, \textit{Murihiku Re-Viewed} (Wellington: Lithographic Services, 1995). A pup provided about two gallons of oil, and a wig, or old male seal, about five or six gallons. See McNab, ed., \textit{Historical Records of New Zealand}, vol.1, 559.

\(^{14}\) See J.C. Beaglehole, \textit{The Voyage of the Resolution and Adventure 1772-1775} (Cambridge: Cambridge University Press, 1961), 22 April, p126.


\(^{16}\) Richards, \textit{Murihiku Re-Viewed}, 17.
Between 1803 and 1810 sealing gangs exterminated almost all New Zealand's remaining breeding seal rookeries. Sydney merchants employed most of the sealers – almost without exception escaped or recently released convicts – though a few English and American entrepreneurs were also involved. The sealers preyed mostly upon fur seals, but they also killed sea lions, elephant seals and (very occasionally) leopard seals. In the first slaughters tens of thousands of fur seals were taken from freshly-discovered Foveaux Strait – and then hundreds of thousands more from the rocky islets of the Southern Ocean, where single gangs sometimes killed tens of thousands of animals.

A few seals escaped only because most of the Sydney merchants went bankrupt. The Chinese market collapsed in 1807 due to over-supply; the next year England suffered financial crisis and in 1810 imposed a heavy duty on oil gained by Australian vessels in New Zealand. Yet, even after seal oil or skins sold in Calcutta brought no profit, they were gladly taken, for the Australian colonies could still offer the Asian markets so few other commodities that the ships would otherwise return empty.

5.2 The impact of sealers

The Otago Peninsula marks the high tide line of this initial flush of sealing. Sealers almost without exception arrived from the south, and looked no further: there is no evidence seals were taken north of this point. Though there is weak and inferential evidence of sealers being dropped here to harvest seals from Cape Saunders as early as 1806 or 1807, nothing is known of them save that they purportedly had friendly relations with Maori. The first known sealers to visit were two small Australian vessels: the

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17 Ibid., 28-29.
18 Ibid., 29.
19 Ibid., 18-19.
20 Ibid., 20.
21 Margaret Steven, "Eastern Trade," in India, China, Australia: Trade and Society 1788-1850, ed. James Broadbent (Sydney: Historic Houses Trust of New South Wales, 2003), 49.
22 The Creed manuscript (Charles Creed, MS papers 1187/201, Alexander Turnbull Library) is an account of early contact written by the Reverend Charles Creed, missionary in Otago from 1844, on the basis of information supplied him by two Maori informants. According to the document's discoverer Reverend Donald Phillips these were Matiaha Tiramorehu (c1795-1881) and probably Rawiri Te Maire (1808-1899).
Brothers which left gangs on islets in the vicinity late in the spring of 1809, and the Sydney Cove which landed gangs on Cape Saunders in 1810. Men from the Brothers, together with a few more from the Sydney Cove, harvested at least 2000 seal skins from these coasts during the summer breeding season of 1810. As noted in chapter three, given the inferred success of previous gangs, and the opportunistic landing of gangs by the Sydney Cove, this harvest suggests that fur seals and (much less certainly) sea-lions still bred as far north as the Peninsula, after several hundred years of continuous Maori occupation.

As we have seen, Maori had already greatly reduced the breeding range of New Zealand’s seals. Rapid European destruction of the remaining seals was predictable. Each gang of sealers knew others would plunder what they did not, and any question of husbanding rookeries was quite academic. After 1810 the bulk of the seals had gone and, as we have seen, the market for their furs collapsed. European visits to Murihiku therefore suddenly fell away and seal populations recovered somewhat by the 1820s. Perhaps a few fur seals even survived to breed around the outer coasts of the Peninsula—only to be extirpated after the discovery of new felting processes opened markets for the skins in Europe. This occurred despite predictions made in Sydney newspapers as early as 1824 that ‘the increase in seals will be totally extinct within about three years’ because of the surfeit of sealing vessels, and the practice of killing both pups and parents. A major marine predator, and primary food source for Maori, had almost vanished from the Otago Peninsula.

These chiefs were certainly two of the most reliable Maori informants alive. Their information suggests that ships had visited for some time prior to the first trouble occurring in 1810. For a published reproduction of Creed’s manuscript see Church, ed., Gaining a Foothold, pp409-411.


24 Most of what we know of these voyages stems from the cross examination of witnesses in court cases held in their wake, thus the information presented is not to be accepted at face value. For the available references to these voyages see Church, ed., Gaining a Foothold, 32-39. For discussion see Entwisle, Behold the Moon 24-36.

25 McNab, Murihiku and the Southern Islands, 262. According to McNab, the cargo of the brig Wellington suggests this possibility. In 1823 it arrived in Sydney with 4000-5000 skins, said to be from ‘Saunders Island’. McNab, for one, thought this referred to Cape Saunders on Otago Peninsula. Peter Entwisle suggests however that this was Solander island in Foveaux Strait, which is perhaps more likely. Pers. Comm. 17 September 2007.

26 Richards, Murihiku Re-Viewed, 36.
Besides the rippling ecological and economic effects of the extirpation of their prey, sealers initiated several of the key processes of environmental change that, as they gathered momentum, have transformed New Zealand almost beyond recognition. Alfred Crosby went so far as to liken their ships to ‘giant viruses fastening to the side of a gigantic bacterium and injecting into it their own DNA, usurping its internal processes for their own purposes’. 27 Sealers did indeed introduce some new species: stock and pest animals, crops and weeds, viruses and bacteria. Yet Crosby’s picture is somewhat misleading; Maori had considerable influence over when, where and why many of these species became established. Whether willingly or unwittingly, Maori hosted most new organisms, and mediated their environmental effects.

The men of the sealing gangs were no exception. Sealing gangs were forbidden to fraternise with the natives, upon pain of forfeiting their pay – a ‘lay’ or share of profits paid according to the number of skins they retrieved, which then fetched about five shillings in Sydney. 28 But captains left these men for months at best to subsist upon small barren lumps of rock with too little food, none of it fresh – and no women. From the very beginning, some sealers unsurprisingly ventured to try the welcome of Maori. 29

Well before the sealers’ arrival on the Otago Peninsula, the Maori living there would have been forewarned of their existence and were perhaps already growing potatoes given to them by their southern relatives, had inspected iron tools, and heard about, if not seen, European ships. 30 In Europeans, Otago Maori encountered people, objects, and

28 For an account of the sealers’ lay system as it operated on one ship, the Governor Bligh, in the south see McNab, ed., Historical Records of New Zealand, 558-60. This states that of crews of 16-20 men, experienced hands received ‘the 60th’, that is the price of one skin in 60. Inexperienced hands received a 1:75 lay. At the time of the voyages (1816 and 1818) skins fetched five shillings in Sydney; by the time of the account (1821), skins fetched 8 shillings there.
30 Contact may have occurred even earlier. Beattie recorded a tradition that Karetai’s father Te Ihutakaru met Cook, and doused him with water to ascertain whether his head was burning, because he was smoking a pipe. There is no record of such an incident in the European accounts of Cook’s voyages however, and even if true the event cannot have taken place in Murihiku, unless it refers to quite another ‘Cook’, perhaps the man who settled at Pegasus, Stewart Island, in 1826. Herries Beattie, Traditions and Legends of the South Island Maori (Christchurch: Cadsonbury Publications, 2004), 463.
ideas strange and foreign beyond all their experience; yet they were prepared to engage from the first. Their leaders had no reason to doubt their power to control encounters with small and isolated gangs of sealers, whom they called ‘takata pora’, the people of the ships.\textsuperscript{31} They immediately grasped the transformative potential of some European goods, and realised they had much to gain from trade with these strange beings. But in Maori eyes and hands European objects were inevitably something different. Maori made iron nails the first currency of trade, but rendered them into excellent chisels, gouges and fish hooks, while iron axes, which were undoubtedly valued for their efficiency in felling trees, were also prized weapons: at Bluff in 1813 Robert Williams found he could procure a 100 pounds of potatoes for a nail, and buy a son from his mother for a hatchet.\textsuperscript{32} However, the most important aspect of these goods to Maori was not superior utility but their sheer novelty; things European presented Maori rangatira with an entirely new arena in which to compete for mana.

The first sealers to come to the Peninsula were probably given little choice: Maori could – and would – provide these hungry and lonely men with fresh food, water, and shelter. First contacts were profitable to both Maori and the takata pora. They were amicable encounters, eagerly sought.\textsuperscript{33} The prospect of warm Maori hospitality even drew a few early sealing ships working eastern coasts to return to Otago harbour despite the paucity of their prey. In 1809 men straying from the Brothers, including the infamous William Tucker, had received a warm welcome at both Otago harbour, and at Whareakeake, or Murdering Beach, just to the north of the Peninsula.\textsuperscript{34} According to the Creed

\textsuperscript{31} Takata pora is the southern Maori equivalent of Pakeha – their name for all those people who were not Maori, a hitherto unnecessary distinction. Pakeha was not in use in the south in this period, so its use is needlessly anachronistic; it only came to be used later, around the mid nineteenth century. Different spellings and pronunciations of this name have been promoted – tangata pora, tagata bola. I have chosen takata pora as it preserves something of the southern dialect’s unique pronunciation, without straying too far into speculation.


\textsuperscript{34} Court cases in Sydney subsequent to the 1809-1810 visits record that Tucker and one Daniel Wilson were found living at ‘Port Daniel’; Peter Entwisle has argued the remainder of the sealing gang were meanwhile staying at Whareakeake. See Entwisle, \textit{Behold the Moon}, 29-32.
manuscript, Tucker later returned to Otago, but this time lived at Whareakeake with a Maori woman for a few years; he became known to local Maori as ‘Wioree’, and introduced the first sheep and goats to the South Island, and to southern Maori.  

But such encounters between sealers and Maori were very fragile, and both parties prone to precipitate conflict. When in 1810 the Sydney Cove hove to in Otago Harbour, perhaps seeking its runaways, it set several gangs to work harvesting seals from Cape Saunders. After the sealers killed a chief, Te Wahie, merely for taking a knife and a shirt, the furious Maori attacked, and several violent and lethal affrays followed as the Sydney Cove and its gangs fled south from the Peninsula. In March 1811 the Sydney papers reported ‘several boats’ crews in various employs having been barbarously murdered, and mostly devoured by the cannibal natives.’ Coming in the wake of the burning of the Boyd in the north, this news considerably dampened Australian enthusiasm for exploiting New Zealand’s resources.

During the quiet decade that followed the end of early sealing, Otago Harbour attracted only one or two captains forced to re-provision crew or refit vessels. These contacts were crucial to how Maori and takata pora began to comprehend one another. The reception of Captain Fowler and his crew on the southern coasts in 1814 dramatically illustrates the volatile and murky nature of early cross-cultural contacts, and the position of Otago on the fringes of the trade networks now interweaving the British Empire’s colonies, markets, and the world’s organisms. Fowler, an American, had embarked from Sydney with a crew of Indian lascars on a ‘pleasant voyage’ to ‘Otaheite and the neighbouring islands and from thence to China’; he was in fact sealing on behalf of the Sydney merchant Simeon Lord, and hoping to sell his harvest in Canton. In the event the voyage was disastrous – on the southwest coast of Te Wai Pounamu Maori stole one of

35 Tucker returned in about 1815, and this time lived at Whareakeake for some time, perhaps a year or two, before leaving. His final visit was on the Sophia in 1817. According to the Creed manuscript three more ships came to Otago between his departure and 1817, though nothing is known of them. See Ibid., 42-45, 129-35.

36 Ibid., 33-36, 133-36.

37 Sydney Gazette, 30 March 1811, 2. In Church, ed., Gaining a Foothold, 53-54.

38 Sydney Gazette, 24 April 1813, 1; 7 August 1813, 2. In Ibid., 63-64.
the ship’s boats (demonstrating quick appreciation for their excellent seafaring qualities), and captured six lascars deserting in another. They kept three of these men, who lived to teach them, amongst other things, ‘the manner of attacking the Europeans during the heavy rains when their guns could not be used, and also how to dive in order to cut the cables of the vessels during the night.’ North of the Otago Peninsula Maori killed at least seven more sealers combing the coasts in search of the missing deserters.

When Fowler and what was left of his emaciated crew sailed their battered brig into Otago Harbour in the late winter or early spring of 1814 they still knew nothing of these events. And here, local Maori cared for them; their chief ‘Papuee’ led his people in uprooting their half-grown and therefore tapu potatoes to feed the sailors, personally carried water casks to the ship a mile through dense flax and mended the rigging with flax rope. This demonstrates that Maori in the area were already familiar with some of the critical needs of Europeans and their ships, and illustrates the lengths Maori sometimes went to in encouraging trade. On return to Sydney, Captain Fowler published his high opinion in light of ‘divided opinion’ about the disposition of Maori. He praised

39 Entwisle, Behold the Moon, 39.
40 Ibid., 63; Extract from Jules De Blosseville, ‘Essai sur les Moeurs et les Coutumes des Habitans de la Partie Meridionale de Tavai-Poenamou,’ in McNab, Murihiku and the Southern Islands, 327-28. Two of these men seem to have been taken south to Foveaux Strait; Edwardson encountered one there in 1823. Thomas Shepherd’s journal reveals one of these men was still living in the Otago area in 1826, probably at Murdering Beach.
41 Entwisle, Behold the Moon 39.
42 Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839, 67 fn.50. See also Entwisle, Behold the Moon 40, fn.215. Both Church and Entwisle estimate the time of Fowlers arrival via the state of the potatoes, and the fact Fowler was seen in Bass Strait in February 1814 and then arrived in the Society Islands on 2 September 1814. Church notes Captain Catlin bought his first potatoes of the season on 6 September 1836, and Octavius Harwood in 1839 on 29 August, and thus place the visit here in late July or early August. In fact, Harwood received 80 baskets of potatoes in 1839 on 8 June, while in 1841 he received a ton on 16 June. Church, ed., Gaining a Foothold, 369; Octavius Harwood, "Copy of Octavius Harwood Journals," in G.C. Thompson (Dunedin: 1838-1842).
43 Papuee’s identity is mysterious. Rhys Richards argues he must have been Kati Mamoe, because he feels that ‘the southward spread of Ngai Tahu was still underway during the first three decades’ of the nineteenth century’. He notes Tahatu was ariki at Otago in 1835, and his father was ‘principally Ngati Mamoe.’ Richards, Murihiku Re-Viewed. Atholl Anderson has suggested Papuee might be the Kati Kuri chief Ihupupu, the grandfather of Karetai and Taiaroa. Atholl Anderson, The Welcome of Strangers (Dunedin: University of Otago Press, 1998), 67, 78. Peter Entwisle suggests he might be Tapui, a Tuahuriri chief who was later an important if very old chief on Ruapuke when Kent visited in 1823, but who had close connections to Otago through his marriage to Kirikino, Korako’s sister. If only on the basis of the similarity of the names’ sound this is obviously the best bet; Fowler used ‘P’ where modern pronunciations use ‘T’ in other instances. See Entwisle, Behold the Moon 40, fn.217.
Papuee 'in the highest terms of regard and veneration...his countenance as benign as his manners are mild...he expressed the most friendly concern for the welfare of the captain and his people, and hoped if they should come that way again, he would call and acquaint him with their welfare.'

Though Peninsula Maori evidently wished to foster trade it was not easy to negotiate peaceful exchanges. In 1817 William Tucker, already hospitably received at Whareakeake, convinced Captain James Kelly to come to Otago to trade for potatoes. When he brought Kelly to Otakou however the Europeans made the error of first trading with the Peninsula people under Korako rather than with Te Matahaere, chief of Whareakeake. Korako monopolised the sealers for days, and refused to provide transport for the Maori from Whareakeake who had gathered on the other side of the harbour to greet Tucker, and share in 'the presents Taka [sic] was dispensing'. By the time Kelly, Tucker, and a few others eventually crossed to Whareakeake, Te Matahaere was furious and attacked them. European goods had become a significant sign of status, and Tucker's betrayal by cooperating with Korako's attempt to usurp trade insulted Te Matahaere's mana and was a potent 'take' (cause) for attack.

James Caddell, survivor of the Sydney Cove who lived with southern Maori during this period, later gave Captain Edwardson the benefit of his experience; Edwardson passed this on to Jules de Blosseville, who wrote:

If one chief receives a less valuable present than that given to another or if a present be made to one of the common people, the anger of the first knows no bounds. This touchiness makes the position of a stranger, who negotiates with these people and who, whatever happens, must try to please everybody, most awkward.

This is why, as Creed's informants remembered, 'Ko te Matahaere i pouri tona ngakau'—'Te Matahaere's heart was dark with anger'. Of the small party that went ashore at

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44 Sydney Gazette, 2 December 1815, 2. In Church, ed., Gaining a Foothold, 67.
45 Charles Creed, MS papers 1187/201, Alexander Turnbull Library. Cited in Church, ed., Gaining a Foothold, 410; or see Entwisle, Behold the Moon, 134.
46 Evison, Te Wai Pounamu, 9; Entwisle, Taka: A Vignette Life of William Tucker 1784-1817, 100.
Whareakeake only Kelly escaped to the *Sophia*, where he found many of the Peninsula Maori were still aboard and busy trading. Kelly proceeded to wreak a misplaced vengeance, killing or wounding Korako, burning the settlement at Te Rauone Beach, later described by Kelly as the ‘beautiful city of Otago’, a ‘town of about 600 fine houses’, and destroying their fishing fleet of forty two canoes.49

This disastrous encounter had significant consequences here and abroad. The Otago Maori abandoned their burnt home on Te Rauone beach, and rebuilt villages at either end. Newspaper accounts of the incident indicate there was substantial bush cover behind the beach. Even supposing Kelly’s figure of 600 houses to be a substantial exaggeration (as it almost certainly is) the fire would have consumed a considerable amount of vegetation, perhaps enough to first initiate the process of sand movement that had completely swallowed this once densely occupied area by the 1860s.50 This speculation gains some support from the fact that in 1895 the kaumatua (elder), Tare Wetere Te Kahu, ‘regarded among his contemporaries as the best authority for the district around Dunedin’ told Chapman that the sand began to spread about the time he was born. Te Kahu’s age is not clear – Chapman believed he was 75 or 80 years old at the time, but when he died in 1906

49 The quotations I have used are taken from an article that originally appeared in the *Hobart Town Courier* 12 April 1858, and was reprinted in the *Otago Witness* 21 August 1858. An earlier and very different account in which Kelly returned to the *Sophia* to find Otago Maori on board, but ‘humanely sent [them] on shore, considering the principle of revenge in such cases unjustifiable’ and left without further incident, appeared in *The Hobart Town Gazette and Southern Reporter* 28 March 1818, p2. A further report appeared in the *Otago Witness* in 1892, arguing that Tucker’s theft of a preserved head in Riverton motivated the attack. Several Otago historians have discussed Maori motives for this attack, various descriptions of which appeared in newspapers and from Maori informants throughout the nineteenth century. This lengthy historiography illustrates how difficult Europeans often found it to understand Maori behaviour. McNab attributed the attack to the untrustworthy and treacherous nature of Maori, and certainly the attack, not understood even at the time, had the effect of giving Maori in the south such a reputation. There were also hints from the mid-nineteenth century that Tucker’s theft of a preserved head in Riverton might have provoked the hostility. Evison, Dacker, Anderson, and Richards have argued (without much documentary evidence) that such attacks were due to Maori growing angry over European interference with women and taking of seals. Peter Entwisle developed the thesis that Tucker’s theft was responsible in the first edition of *Behold the Moon*, but quickly changed his mind after the discovery of the Creed manuscript. This documented, for the first time, a convincing explanation from credible Maori sources, and is therefore the explanation I adopt here. Entwisle’s revised text provides by far the most detailed analysis of the incident and its historiography, in addition to providing all of the known primary and secondary sources in full. See Entwisle, *Behold the Moon* 141-59.

50 Ibid., 56.
his obituary in the *Otago Witness* stated he was 104 years old.\(^{51}\) Either way, such recollections suggest sand began to move fairly early in the nineteenth century.

After Kelly's alarming reports of what had happened to Fowler and himself were circulated in Australia, no European ship entered the harbour for six years. A succession of violent encounters along the coasts to the south during that time cemented the reputation of southern Maori in the Australian colonies and further abroad as dangerous, untrustworthy cannibals.\(^{52}\) The significance of this reputation can be overstressed; fear of cannibalism was undoubtedly prevalent, and even pervasive, but while seal skin prices remained low the point was largely moot. Once prices rose after 1820, spiking at 20 shillings per skin, European interest in Murihiku resumed regardless, for despite the much smaller harvests now available, southern Maori eagerness to trade in a variety of other commodities made profit possible.\(^{53}\) Otago Maori, for their part, did not forget Kelly, and the consequences of his attack upon them continued to influence events into the 1830s.

### 5.3 Maori importation of the world

Sealers had brought Maori into contact with technology, ideas, and organisms from the wider world. Maori assiduously cultivated their presence, and thereby initiated the process of entwining themselves, and the ecosystems of southern New Zealand, into the commercial market economy beginning to girdle the globe. Maori attitudes largely determined which aspects of the European biota brought here survived and thrived: plants and animals that they saw value in were tended, and transported to places where new habitats were created for them. Most introduced species ignored by Maori soon perished.\(^{54}\)


\(^{52}\) Entwisle, *Behold the Moon: European Occupation of the Dunedin District 1770-1848*, 57.


\(^{54}\) This is clearly shown by the fate of Cook's plantings in Queen Charlotte Sound and Dusky Sound. As noted below, it is possible that Maori spread potatoes from these gardens, but otherwise, as Cook found returning to Queen Charlotte Sound in 1777, and Vancouver found on returning to Dusky Sound in 1791, they were soon simply overgrown and swallowed by native vegetation. See Anderson, *The Welcome of*...
To Maori, the potato was the most significant arrival. Gangs of sealers carried seed potatoes and sometimes other crops to assure a reliable food supply. They introduced potatoes into the far south around 1803. In the minds of Kai Tahu leaders, potatoes probably initially represented simply a potent way to attract regular contact with European shipping and gain iron: they were ‘the means by which the ship people could be cultivated.’ As a result, potatoes rapidly became the primary medium of exchange in the growing trade between Maori and takata pora. But southern Maori found potatoes meant much more than this, for using familiar techniques they could now grow large quantities – seven to 14 tons per acre – of a fast-growing and reliable crop of carbohydrate-rich food, that returned much higher yields of energy than traditional vegetable foods, for far less effort. This was especially important given that sealers’ depredations soon removed the remnants of what had been the primary source of energy in the south throughout the prehistoric period, fatty seal meat. At a stroke, therefore, Maori cultivation of potatoes removed a primary limitation on population growth in the south, and provided Europeans with a compelling reason to trade with them.

Southern Maori had rapid and impressive success in cultivating potatoes. Maori had a long history of attempting to extend kumara cultivation beyond climatic boundaries, growing it in times and places where it would never naturally survive. Although hardier,

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*Strangers*, 74, 224, fn.14; Neil Clayton “Weeds, People and Contested Places: Selected Themes from the History of New Zealanders and Their Weeds 1770-1940” (University of Otago, 2007), 203-04. There were exceptions – cabbages spread across the hillsides of Queen Charlotte Sound, as observed by Dieffenbach. But the tendency ever since the doctrine of ‘displacement’ became dominant in the nineteenth century has been to assume that these exceptions were the norm. For example, McAloon simply notes that most of the European plantings ‘flourished’ – which they certainly did in the brief while the garden was maintained – and not that they were soon swamped by indigenous competitors. McAloon, “Resource Frontiers, Environment, and Capitalism,” 54.


56 Ibid, Belich, *Making Peoples*, 146. In the 1960s it was popularly supposed that potatoes were spread into the south by Maori from the gardens planted by Cook in Queen Charlotte Sound. This is entirely possible and indeed highly plausible – but there is simply no hard evidence to support the idea. Watkin’s diary entry for 5 July 1842 – which has been treated as supporting evidence – simply records in this respect that Korako (*not* the Koroko involved in the Kelly fracas) remembered the arrival of Cook and the arrival of the potato; this does not firmly associate these two events in time however, nor does it clearly suggest a causal linkage.


58 Ibid., 73.
potatoes shared similar requirements. By 1810 Maori had cleared substantial areas of land to grow potatoes at several places in Foveaux Strait. In the winter of 1813 on an abortive expedition to develop New Zealand flax, the rope maker Robert Williams entered Bluff Harbour, and reported that:

The natives attend to cultivation of the potato with as much diligence and care as I have ever seen. A field of considerably more than one hundred acres presented one well cultivated bed, filled with rising crops of all ages, some of which were ready for digging, while others had been but newly planted.  

Although it is not possible to precisely date this visit, it occurred no later than the end of June – an early and cold time of year to have just planted frost-vulnerable potatoes in Bluff and have a crop sitting in the ground. In fact, most of the varieties then grown by Maori set tubers in autumn as the days shorten. The most widespread of these ‘Maori potatoes’, the urenika, or kapana mangumangu as it was known in the south, sets its tubers particularly late in the year. This firmly fleshed potato is ‘a small rough kind…streaked all through with black streaks like marble’.

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60 McNab, *Murihiku and the Southern Islands*, 133-34. The voyage left Sydney on the 19th April 1813, took 20 days to reach the Solander Islands, then endured ‘several days bad weather’ before boats were used to cross Foveaux Strait and reach Bluff Harbour (which the party named Port Macquarie) where these fields were described. The observed overlap between potatoes ready to harvest and those just planted simultaneously in the ground in midwinter gains some credence from several other records, such as the fact Harwood occasionally received potatoes in midwinter, likewise Catlin received his first potatoes at the end of August (as already noted), while Tuckett and Monro found the potatoes ‘green and flourishing’ (Monro) when they reached Otago on 24 April 1844. This despite though those seen on the Port Cooper plain a fortnight before being withered by frost, and despite their waking to a ‘Ground white with hoarfrost’ at the head of Otago harbour on 30 April. This is also when they sampled the finest potatoes Tuckett had tasted in New Zealand. Tuckett also recorded in a letter written in mid August 1844 that more potatoes were to be planted next month. See Hocken, *Contributions to the Early History of New Zealand [Settlement of Otago]* 213, 19, 38.

61 Graham Harris, *Nga Riwi Maori – Maori Potatoes* (Lower Hutt: The Open Polytechnic of New Zealand, 1999), 40. Boulbee recorded that potatoes were dug up when the ‘berries are ripe’, making that harvest in autumn. See A. Charles Begg and Neil. C. Begg, *The World of John Boulbee* (Christchurch: Whitcoulls Publishers, 1979), 102-03.

62 G.M. Thomson, *The Naturalisation of Animals and Plants in New Zealand* (Cambridge: Cambridge University Press, 1922), 450-51. As indicated, Thomson has the name as kapana mangumangu. One of Beattie’s informants told him that this potato was known as ‘mangumangu in the north, but tatairako in south’; his informant came from further south than Dunedin, where European residents presumably followed local Maori usage in occasionally distinguishing them as ‘mong-a-mongs’, from the more usual generic term ‘Maori potatoes’. See Herries Beattie, "Southern Maoris," (Dunedin: Hocken Library, n.d.), 73; James Barr, *The Old Identities* (Dunedin: Mills, Dick and Co., 1879), 50-1. The Ulva L. Belsham Papers contain an undated list of southern names including ‘Tatairaka – blue skin, very white inside’ See "Transcript of Weller Brothers' Correspondence," (Dunedin: Hocken Collections, n.d.). Harris provides a
However Maori probably accumulated varieties that could be harvested at different times quite rapidly, in order to meet the diverse needs of subsistence and trade.\(^6^4\) Thus Best cites several early records stating that Maori in the north successfully grew at least two crops of potatoes each year. According to Best:

in order to obtain a very early crop [Maori] planted seed tubers as early as June in scrub land or light bush, then felled the bush which was burned in early spring. The fire destroyed the haulm of the plants that had grown up through the felled timber, but a new growth soon followed, whereas exposure to frosts would have spoiled the crop.\(^6^5\)

Best recorded this method as in use in the north. There are no confirming records in the south, but William’s observations suggest similar patterns, since the plants he saw ‘ready for digging’ can only have been over-wintered in the ground.\(^6^6\) Similar techniques must have been developed to combat frost too. In the 1820s a southern chief ‘Tommy’ (actually James Caddell) described these agricultural methods:

When they wished to clear a piece of ground 50 or 100 Natives would set to work and clear a large piece by entirely cutting down all trees and afterwards when they got dry set fire to them and then dig the ground and plant potatoes. He said the Natives pay very little attention to any instructions which Europeans give them as they think their own method of doing things preferable.\(^6^7\)

Boultbee observed that potatoes were planted three together, and earth piled over them, so that the fields appeared to be full of ‘mole hills’; these were techniques transplanted from growing kumara.\(^6^8\) James Somerville, an early settler on the Peninsula, saw the same practice still in use much later amongst Maori at Otakou, noting they ‘planted in

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\(^6^4\) The Ulva L. Belsham Papers list distinguishes nine varieties. They are differentiated by shape and colour, for example: ‘Ropi - round in shape’; ‘Koura - long, very much like the kumara’; ‘Uhi - very much like blue kidneys’; Raramu - ‘Black skin, pale white inside’; Einuhara- black skin, brown inside’. See ‘Notebook of Southern Place names, waiata and vocabulary’ Misc-MS-0933/002. Hocken Collections. It is clear that at least a few varieties were present early on. In a letter to Edward 21 March 1840 George Weller specifically requested he ‘purchase the Big Yellow potatoes’.
\(^6^6\) Ibid., 283; Khyla Russell has informed me that it is possible to raise three crops of Maori potatoes per year, traditionally planted in autumn, winter, and spring. Pers. Comm. 10 September 2007.
\(^6^8\) Begg and Begg, *The World of John Boultbee*, 102-03.
hillocks; the way they planted them was to put a potato on the surface and with a grub hoe they drew up the soil all around about until they had made a good-sized heap.”

Cultivating potatoes in mounded, ash-enriched, free draining and sun-drenched soil on the harbour side of the Peninsula met potatoes’ requirements perfectly. By 1813 – and almost certainly earlier – all the Otago Maori communities on and around the Peninsula cultivated potatoes, the generic name for which was mahetau – ‘a string of sinkers’ – on the gentle slopes rising to the low saddle south of Taiaroa Head, and just over the harbour mouth on the sand flats at Aramoana.

As the leaders organised their people to enrich themselves by meeting European demand for potatoes, fresh water and hospitality, settlement patterns began to gradually alter. Population density grew in villages like those at Otakou, clustered around the deep and sheltered anchorages Europeans favoured. More people now stayed at their villages, for longer, driven by the need to cultivate, tend and harvest their potatoes, each village tending its own crop. This far south, only potatoes could be grown and stored in sufficient bulk to provide such a concentration of people with winter food and maintain a trade surplus. The cultivation of potatoes therefore initiated self-reinforcing processes, or positive feedback loops, that increased the density of the Maori inhabitation of the Peninsula, and focused it at the harbour mouth. By the 1830s, when European ships came to Otago Harbour much more frequently, Maori at Otakou had developed the capacity for an export economy based on supplying food and fibre to shipping, and their communities thereby became a node within a transoceanic nexus of trades and exchanges.

5.4 European exports: inadvertent arrivals of the European world

Almost all the species deliberately imported by Europeans to ease their existence here required Maori care to survive. In contrast, most species inadvertently exported here by Europeans used Maori to survive against their will or without their knowledge. Only a very few were so adaptable that they needed no help from humans whatsoever, and began to transform the wider environments lying beyond human habitation.

Maori could comprehend parasites such as fleas (*Pulex irritans*) that became known as ‘Te Pakeha nohinohi’, the ‘little stranger’, and very rapidly infested Maori dwellings and clothing. But no one then knew of the existence of bacteria or viruses. And, because of long isolation in a temperate climate, Maori were almost completely free of such problematic companions, having largely shaken off the tropical macro and micro parasites adapted to them when their ancestors sailed south. Their epidemiological inexperience now made them extremely vulnerable. As Crosby puts it, ‘Maori were as unprepared for continental pathogens as Adam and Eve were for deceitful serpents.’ The most important of the likely early infections were varieties of influenza, respiratory ailments, especially tuberculosis, and the venereal diseases syphilis and gonorrhoea.

For the crew of Cook’s ships these diseases were normal occupational hazards. Cook’s crew certainly infected some Maori in Queen Charlotte Sound with venereal disease, and, like the potato, these organisms may even then have been spread into Murihiku by Maori moving south. Again, however, it is most probable that sealers introduced these

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73 J. R. H. Andrews, "The Parasitology of the Maori in Pre-European Times," *New Zealand Medical Journal* 84 (1976): 63-65. According to Andrews, prior to contact with the wider world, Maori coexisted with only seven parasites, none of which were particularly harmful. These comprised five ectoparasites: head, body and (probably) pubic lice (respectively *Pediculus humanus capitis*; *P. humanus humanus*; *P. Phthirus pubis*) the scabies mite (*Sarcopes scabei*) and *Demodex folliculorum* — a common mite cosmopolitan in humans worldwide; and two endoparasites, the worms known as ‘iro’, a threadworm (*Enterobius vermicularis*) and Ngoiro (possibly *Ascaris lumbricoides*).
75 Three men died of tuberculosis on Cook’s first voyage. See Crosby *Ecological Imperialism* (2nd ed.) 233. His difficulties with venereal disease are well documented.
diseases to the Maori communities of the Peninsula. As these venereal diseases became widespread throughout the Maori population, they significantly decreased fertility and reproductive rates. 77 Gonorrhoea commonly causes sterility in women; syphilis often prevents babies being successfully carried to term. 78 Early outbreaks of other disease perhaps occurred in Murihiku, but the direct evidence is very weak. If epidemics occurred, they were most probably a form of influenza. 79 Maori were culturally completely unprepared to cope with baffling new sicknesses, and by the 1820s dreaded the effects of what they could only conceive of as malignant European atua. 80

known as ‘rewharewha’, which according to Maori informants of the nineteenth century, depopulated much of the lower North Island. Several sources indicate this, the most explicit being W. H. Goldie (1904) ‘Maori Medical Lore,’ Transactions of the New Zealand Institute, 84 especially. Also Johann Riemenschneider, “On Maori Habits of Life,” (Hocken Library, 1865). Note that Goldie draws on Elsdon Best’s information. 77 Fenton’s census of Maori taken in 1857-58, but going back to 1844, recorded 35 percent absolute sterility in women. See D.I. Pool, Te Iwi Maori: A New Zealand Population Past, Present & Projected (Auckland: Auckland University Press 1991), 50. 78 Pool, The Maori Population of New Zealand 1769-1971, 93. 79 While it is perfectly plausible that an early disease epidemic may have occurred in the south (and still more likely in the north), direct historical evidence for it only has very weak sources. Tuhawaiki in his famous speech at Otakou, as translated and described in print 60 years later by George Clarke, stated that an epidemic of measles brought from Sydney occurred when Tuhawaiki was ‘a youth’ (he was then in his early thirties). In 1860 Stack recorded that a measles epidemic killed 2000 people in ‘Riverton’ in 1817 (note that the precision of this date is a little peculiar, as is the reference to ‘Riverton’, which did not exist under that name then). See James Stack, Through Canterbury and Otago with Bishop Harper, 1859-60 (Christchurch: The Nag’s Head Press, 1972), 82. Evison accepted this record, and following him Entwisle has also considered its ramifications. Anderson, wisely, dismisses it as unlikely. See Evison, Te Wai Pounamu, 101 fn.15; Anderson, The Welcome of Strangers, 193; Entwisle, Behold the Moon 119. However Anderson also downplays the significance of the 1835 epidemic by arguing it could not have occurred when Tuhawaiki was ‘a youth’. This is beside the point. Regardless of whether an earlier epidemic occurred, as is detailed here, a measles epidemic brought from Australia did devastate Maori in 1835; contra Anderson, I think there is very little doubt Tuhawaiki was referring to that. The crucial point is that measles is not recorded as present in Sydney (or anywhere else in Australia) prior to 1828, indeed its complete absence is explicitly noted. No epidemic measles outbreaks occurred in Australia prior to an 1834 outbreak. See Andrew Cliff, Peter Haggett, and Smallman-Raynor, Measles: An Historical Geography of a Major Human Viral Disease (Oxford and Cambridge: Blackwell Publishers, 1993), 122. Given travelling times and the virus’ survival span in humans, there is probably no other plausible point of origin for measles other than Australia. Accordingly, if an epidemic occurred about 1817 it was not measles but more probably influenza or perhaps tuberculosis. It is significant perhaps that in 1820 a worldwide pandemic of influenza struck Australia, causing the first flu epidemic there. See J.H.L. Cumpstone, Health and Disease in Australia: A History (Canberra: AGPS Press, 1989), 313. Finally, Robert Carrick, not a particularly reliable source, provided an unsubstantiated and probably confused narrative in the Southland Times 31 March 1900 which I include here for completeness: ‘The Bubonic Plague’, in which he describes an illness ‘Karawaraway’ (clearly Rewharewha), spread by a whaling ship which returned captured and infected women to Tokomairiro in Molyneux Bay; according to Carrick, only one Maori survived, and he left for Hobart. See Herries Beattie, "Newspaper Clippings " (Dunedin: Hocken Library, n.d.), 50. 80 This was because all sickness was due to the influence of atua; in particular, disease was seen as the manifestation of atua inhabiting humans to punish them for breach of tapu. Treatment therefore revolved not around treating symptoms, but on expelling the atua. See Edward Shortland, The Southern Districts of
Of the significant species sealers introduced into Peninsula ecosystems, perhaps only one needed no help from human beings once ashore. This was the Norway rat (*Rattus norvegicus*). Admittedly Norway rats first came to Murihiku with Cook, and other early explorers, but the sealers explored southern coasts closely, and were therefore responsible for spreading these rats thoroughly and rapidly. Surrounded by enormous populations of naïve prey, and capable of breeding several times in a year, Norway rats increased exponentially. As early as 1826 the sealer John Boultbee and his companions at Milford ‘slept in spite of the rats which swarmed’. 81

Norway rats are comparatively large (200-300 grams) ground-dwelling predators comfortable in water but which seldom climb trees. 82 The rapid spread of Norway rats had significant effects on a wide range of New Zealand’s fauna, but as small, inconspicuous night-time hunters, their slaughters went almost entirely undocumented. Indeed for a long time predator impact was generally downplayed or ignored in explanations of New Zealand’s faunal extinctions in favour of climate change, habitat loss or disease. 83 It is now clear that predation is the primary cause of almost all recent bird, reptile, and frog population losses and extinctions. 84

On arrival Norway rats had a wide range of prey including both many vertebrates, especially ground-nesting or dwelling birds such as the New Zealand bittern, quail, South Island piopio, rails, and some wrens, as well as tuatara, lizards and frogs, and large invertebrates such as ground beetles, scarabs, caterpillars, weta, and centipedes. 85 Kiore

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84 Ibid., 536, 57-58; Wilson, *Flight of the Huia*, 45.
85 These effects were seldom documented as they occurred, but as with the impacts of kiore, there are several ways in which they can be inferred. In a few areas (though not, to my knowledge, on Otago Peninsula), local populations of some species were observed to decline precipitously prior to the arrival of other predators. Bush wrens and saddlebacks were rare on Banks Peninsula by 1870 for example. Most obviously, and unfortunately, these effects are replicated when rats invade new territory. Within two years of the arrival of Norway rats on Whenuakura Island tuatara were exterminated. Another indication is
predation had probably already killed off some of these species on Otago Peninsula – tuatara, for example, and Norway rats now extirpated the Peninsula’s populations of more prey species in a quick pulse. Norway rats are some four times the size of kiore, and so can predate much bigger birds. More of the formerly enormous populations of colonial burrow-breeding sea birds nesting on the Peninsula therefore declined due to Norway rats attacking the adults, chicks and eggs of the larger petrels such as Cooks and Pycroft’s petrels, while even the most robust and aggressive species, grey-faced petrels and sooty shearwaters, probably suffered considerable breeding failure due to egg and chick predation. And kiore, which had already so diminished New Zealand’s biodiversity over several centuries, were now themselves prey, and their ecological niche was greatly circumscribed, though as later settlers found, they were far from eradicated upon Otago Peninsula.

By eradicating one major predator – seals – and introducing another – Norwegian rats – sealers initiated significant and largely irreversible processes of cultural and ecological change. Comfortable both in water and on land, Norwegian rats became a keystone species exerting enormous influence over the composition and structure of almost all ecosystems. The sealers’ other environmental influences were more indirect, and much more a function of how Maori adapted their economic and social patterns to suit the new opportunities sealers provided. Maori knew sealers needed feeding, and soon learnt they had strong dietary preferences for the foods they brought with them. Cultivating potatoes solved this problem, and that presented by the removal of seals. So while there are no records of events at the Heads between 1817 and 1823 we must suppose that the influence of what the sealers had left behind grew as potatoes flourished, and rats spread.


Meanwhile, the reports the sealers spread of southern New Zealand shaped much wider expectations, and framed how the world gradually heard word of New Zealand and its people. Southern Maori and sealers had each learnt that they had a great deal to gain from their encounters – but both were now very wary about the prospects for peaceful trade.

5.5 Tentative trade returns: 1823-31

Otago Harbour was only rediscovered by the world after the New South Wales government, prompted by interest from the British Navy, decided to renew efforts to develop New Zealand flax as a commodity.\(^8\) Several sporadic efforts to develop marketable material from the plant had already been made, but for a very considerable period, only Maori could prepare fibre that could be woven into rope or canvas. Indeed Europeans always struggled to cope with the properties of New Zealand flax, and never succeeded in matching the quality of fibre Maori could provide.\(^9\)

Despite bringing only a small sample of prepared flax back to Sydney, Captain Edwardson’s 1822 to 1823 voyage in the *Snapper* aroused considerable interest in both Sydney and in Foveaux Strait about the potential for trade. One reason for this was that in lieu of flax Edwardson returned with a cargo of Maori ‘curios’, ranging from birds’ skins, woven and carved functional items, to preserved and tattooed heads, for which there was already an established market.\(^9\) Moreover, a spike in the price of seal skins (up to 20/-) encouraged Australian merchants to renew sealing on southern coasts in the 1820s, though it increasingly became only an adjunct to trading with Maori.\(^9\)

\(^{8}\) Richards, *Murihiku Re-Viewed*, 33.

\(^{9}\) See ‘Report on New Zealand Flax, by R. Williams (Ropemaker),’ in McNab, ed., *Historical Records of New Zealand*, I, 475-66. The Sydney Gazette, Thursday, January 4, 1827, 3, col. 2. reported on the largely unmet demand for flax: ‘One hundred tons per annum could be worked up by that industrious rope-maker in Catherine Street, Mr Cowell’. Flax retailed at up to £20 a ton. See Peter Entwisle, "Edward Weller," in *The Advance Guard*, ed. G.J. Griffiths (Dunedin: Otago Daily Times, 1974), 35.

\(^{9}\) Trade in Maori curios commenced with Cook’s voyages, and continued into the twentieth century. Joseph Banks, for example, inaugurated the trade in preserved heads, purchasing one in Queen Charlotte Sound in 1770. The early curio trade was fairly significant. Indeed, Peter Entwisle has gone so far as to suggest that Tucker may have inaugurated a new industry among Maori to serve this trade in ‘curios’, by promoting the making of tiki from adzes. Entwisle, *Behold the Moon* 89-90.

\(^{9}\) Richards, *Murihiku Re-Viewed*, 36, 40.
Edwardson also introduced southern Maori to pigs, an animal that soon became a significant trade commodity throughout Murihiku. Pigs were traded out of Otago as early as 1826. Edwardson returned to Sydney with the Pakeha-Maori chief James Caddell, (saved from the killing of the Sydney Cove’s men in 1810), together with Caddell’s wife Tokitoki (niece of Honekai), and Tuhawaiki (known to Edwardson as ‘Jacky Snapper’). Caddell provided the critical interpretive link between the worlds of southern Maori and colonial Australia; with his help the prospect of peaceful trade was embraced by both sides.

In 1823 the New South Wales government sent the Mermaid to Murihiku under Captain Kent, with Caddell and the returning Maori on board to help further trade. This voyage opened contact between Otakou Maori and the wider world, in circumstances which reveal something of the complex dynamics of Maori ship. At Ruapuke in June, Kent met the Otago chief Matenga Taiaroa, returning home from his annual mutton birding and sealing expedition and visiting his relative Te Wera. Taiaroa and Te Wera jostled to establish the pre-eminence of their mana before Kent; Taiaroa impressed Kent, showing ‘great ingenuity in understanding and imitating European ways’. But it was not Taiaroa alone who drew Kent to come to Otakou. Kent needed to convince Maori women to return with him to Sydney to clean the green flax. The Maori were wary – the last visitors there had been treated badly, they said. Te Wera’s wife agreed to go, but on condition that another woman and both their husbands come too. On the pretext that the best shells to scrape flax could only be obtained elsewhere, they sailed with Kent, first to Molyneux, where it was too rough to land, and then to Otago Harbour.

Kent thought the harbour a new discovery, and named it Port Oxley. He described it as a ‘commodious and well sheltered harbour, running in a southerly direction, navigable up

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93 John Rodolphus Kent, "Journal of the Proceedings of His Majesty's Colonial Cutter Mermaid from the 8th Day of May to the 15th Day of August Inclusive," (Hocken Library, 1823), 25 June, 39. Though born at Taumutu, Matenga Taiaroa had now established himself at Otakou under the authority of Tahatu, who was pre-eminent chief at Otakou until the mid 1830s.
94 Kent, ‘Journal,’ 2 July, 50; Anderson, Welcome of Strangers, 68.
about 5 miles, a sandy bar lies over the entrance, over which we carried 3 fathoms, the
clearest channel is on the South side, as many sand banks lie inside, covered at high
water.' This first European description highlights a recurrent theme in early ship visits:
the difficulty both to locate and to enter the harbour, shielded from the east by the cryptic
coasts of the Peninsula. It also confirms that at least two channels then connected the
Harbour to the outer sea, known to Maori as Otakou and Aramoana.

When he arrived Kent saw 'two native settlements, one near the Harbour mouth, the other
a short distance up the river but the inhabitants are few.' Of course many Maori were
away muttonbirding at the time. Everybody was anxious. The Maori backed off the
beach into the bush and waved their cloaks to signal their peaceful intent; the Europeans
would not land until, with Caddell's help, each party was reassured of the other's
intentions, and the Europeans 'were met on the beach by two old men, who touched
noses with us as customary enquiring from whence we came, and what was our
business.' The Otago Maori then readily agreed to trade what little dressed flax (48
pounds) they had, explaining that:

the natives to the Southward had told them a vessel would not come for flax, that
it was not true the reports they had heard to that effect, and very justly observed
the Southerns had told them so for the purpose of keeping all the trade within
their own limits, but now when they found a vessel had come, and would come
again, they meant to commence manufacturing, as soon as the warm weather set
in, and would likewise inform all their friends accordingly.

When more Maori arrived from the north two days later, the Lascar with them declared
that:

not knowing that the flax would ever become an object of trade, they seldom
manufactured more than is required, to make their garments, but now that they
saw a vessel come for it, he had no doubt but a great quantity could be procured,
in a few months, as this party of natives would inform the other tribes, along the
coast.'

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95 Ibid. 103-04.
96 Ibid.
97 Ibid., 2 July, 17 July 104.
98 Ibid. 17 July 76.
99 Ibid., 19 July 1823, 81.
100 Ibid.
Maori desire to monopolise access to Europeans was nevertheless clear: 'There is certainly a very great jealousy existing between the parties, and their only care at present seems to be in watching each others' motions.'\textsuperscript{101} Kent reported on return to Sydney that 'I was much pleased with the manner of our reception by these southern savages, they with great warmth told me they did not intend to kill any more white men now that we have become friends by commencing trade.'\textsuperscript{102}

Trade in flax inaugurated a different economic relationship both between Maori and tangata pora, and between Maori and their environment. Whereas commodities like potatoes met the fleeting demands of transitory visitors, Maori flax products were exported to meet Australian demand for rope to rig ships, and material to stuff mattresses. And in response to its new commercial value, Maori began to alter their relationship with flax. Flax fibre bound traditional Maori society together – among many other items their houses, clothes, fishing nets (and the making and using of large nets was a principal communal activity) all required flax. Yet small, localised populations imposed only limited demands on flax resources. European trade however offered the prospect of markets whose size and scope Maori could scarcely comprehend. It is little wonder Maori were immediately willing to commence manufacturing, preparing and storing quantities of finished fibre (whitau) to satisfy anticipated trade. Maori were able to dominate this trade, despite Australian efforts to manufacture fibre from New Zealand flax, because only they could economically produce flax fibre fine enough to compete on the Australian markets.

The truce held and trade flourished under the ultimate authority of the \textit{ariki} Te Whakataupuka, son of Honekai and Kohuwai, and therefore an embodiment of the truce between Kati Mamoe and Kai Tahu.\textsuperscript{103} Te Whakataupuka forbade the killing of

\textsuperscript{101} This quotation from Kent's journal for 20 July 1824 is cited in Evison, \textit{Te Wai Pounamu}, 34. It does not appear however in the transcript of Kent's journal. Kent, "Journal of the Proceedings of His Majesty's Colonial Cutter Mermaid from the 8th Day of May to the 15th Day of August Inclusive."
\textsuperscript{102} Kent, "Journal," 14 June, 30.
\textsuperscript{103} Evison, \textit{Te Wai Pounamu}, 39. According to Atholl Anderson, Honekai died about 1815, and was succeeded by Te Whakataupuka. See Anderson, \textit{Welcome of Strangers}, 75. Evison claims no Pakeha were killed 'on Murihiku coasts' after 1823, Evison, \textit{Te Wai Pounamu}, 34.
Europeans and was supported in this stance by the other primary leaders of Murihiku, all close relatives. They included the Otago peoples' leading chief, Tahatu, described by the sealer John Boultbee as 'a man of peaceful habits, the reverse of Pahee [Te Pahi], his brother, who was a warrior.'

Maori desire for trade was matched by growing wariness of British power after Te Pahi's drowning in 1823 was attributed to the displeasure of atua at his killing Europeans, reinforced in a more material fashion by the visit of British warship HMS Tees to Foveaux Strait in 1824, and reports of European power by Maori returning from Sydney.

Very few Europeans had the necessary knowledge to successfully negotiate with Maori, who besides preferred to establish and maintain on-going trading relationships with particular individuals. Kent, later to marry Tiria, daughter of the Maori King Te Wherowhero, was immediately prominent amongst them. Over the next few years Kent proceeded to establish a trading network based on flax that linked the principal Maori settlements of the south, Foveaux Strait, Otago, and Banks Peninsula, to Sydney. According to Boultbee, by 1827 Kent had 'acquired an extensive knowledge of the language, which with his partiality for the people themselves, procured him considerable interest. He generally had 8 or 9 New Zealanders on board his vessel, who

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104 Begg and Begg, *The World of John Boultbee*, 220-21. For discussion see Evison, *Te Wai Pounamu*, 27, 31. Haberfield described him 'a superior stamp of a man, liked by everyone and respected by all. He was always strangely quiet and dignified, and he had the manners of a gentleman.' See 'Reminiscences of William Isaac Haberfield,' in *Evening Star*, 14 February 1891. Also transcribed, with comment, in Church, ed., *Gaining a Foothold*, 257-263.

105 Te Pahi had recently killed men from the *General Gates*, as well as the youth Ebenezer Eton at Port William in 1823. Begg and Begg, *The World of John Boultbee*, 102; Evison, *Te Wai Pounamu*, 34; Anderson, *The Welcome of Strangers*, 76. According to Ian Church the youth's name is listed on the ship's muster roll as Eton; the historians cited above give it as Denton. Ian Church, Pers. Comm. 1 October 2007.

106 Church, ed., *Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839*, 16, 109-111.


108 The *Samuel* visited Otakou and Foveaux Strait in 1823 carrying muskets to trade for flax, returning with 800 seal skins. See Church, ed., *Gaining a Foothold*, 107. Kent returned to Otakou several times over the following years to trade both for dressed flax and flax plants. He was here early in 1824 on the NSW government's *Elizabeth Henrietta* and returned a chief 'Titohikau' and his wife from Sydney; again later in 1824 in the *Mermaid*; and according to Shepherd's diary again in May of 1826 when Herd was also here. See *New Zealand Herald*, 9 October 1880, and *Sydney Gazette*, 1 July 1824 p2, col.1, in Church, ed., *Gaining a Foothold*, 108-09, 111; Shepherd, "Journal of T. Shepherd," 8 May. Also Entwisle, *Behold the Moon*, 73, fn. 252.
went to and from Sydney with him.' He also left agents onshore with the Maori communities at Akaroa, Foveaux Strait, and perhaps Otago, to organise cargo.\textsuperscript{109}

It was probably Kent who persuaded Captain Herd, of the first New Zealand Company expedition, to abandon any thought of establishing a settlement in Port Pegasus on Stewart Island, when they met there in April of 1826.\textsuperscript{110} After Kent told him of the qualities of Otago, Herd and Kent together visited Otago harbour in May. Kent returned to Sydney with ten tons of ‘the very best quality’ flax, while Herd’s visit eventually publicised the existence of Otago harbour in Sydney and Hobart, providing colonial ship captains with the first detailed chart of the harbour’s entrance and anchorage, an object essential to further contacts.\textsuperscript{111}

\textsuperscript{109} For quotation and accounts of Kent’s agents in Foveaux Strait see Begg, \textit{The World of John Boultbee}, 195, 197-98, 219; Richards, \textit{Murihiku Re-Viewed}, 38. These men, John Kelly and George Moss also established long term relationships with Maori; both lived there many years, and lived with and were later married to, Maori women on Ruapuke Island. See also Church, ed., \textit{Gaining a Foothold}. For a record of Kent’s agents at ‘Tarkow’ [Takapunake], the Banks Peninsula home of Te Maiharanui, then head of Kai Tahu, see Samuel Marsden, "Additional Observations," (Dunedin: Hocken Library, n.d.), 18 April 1831. Marsden discusses the use by Te Rauparaha of the \textit{Elizabeth} (captained by William Wiseman, one of Kent’s employees), to capture and kill Te Maiharanui, an event which greatly disturbed both Europeans in Australia and Maori in New Zealand. Marsden notes that Kent ‘has long had an establishment’ there, and that Kent’s two agents at ‘Tarkow’ were returned to Sydney by the \textit{Elizabeth} returned to Banks Peninsula as soon as they could. Kent’s long-established trade explains why Te Maiharanui, high chief of all Kai Tahu, would venture onto a trading ship: this was business as usual. The suggestion Kent may have had agents at Otago is speculative, but logical. See also L. Langlands, ‘Reminiscences of Early Days: Wild Pig Hunting,’ \textit{Otago Witness}, 11 August 1909, 13. This suggests someone was about to take care of European pigs at a very early stage.

\textsuperscript{110} This meeting is an extraordinary coincidence. At the same time another ship, the \textit{Sally} was also at Pegasus on a sealing voyage. One of its crew Edwin Palmer went north, probably to Otago (depending on the identification of Taieri Heads), with Te Whakataupuka and bought two pigs and 3500 lbs of potatoes for two muskets and an adze.

\textsuperscript{111} For the fact the ships were there at the same time see Shepherd, "Journal of T. Shepherd," 8 May. For Kent’s cargo see \textit{Sydney Gazette}, 4 January 1827, p3, in Church, ed., \textit{Gaining a Foothold} 131. For Herd’s account of the harbour see Church, ed., \textit{Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839}, 127-128. Herd’s accounts were very widely available after they were published in 1838 in J.S. Pollack’s accounts of voyaging in New Zealand.
Herd’s chart (Figure 7, above) depicts the mouth of the Otago harbour. It is primarily a mariner’s document, showing how a captain should seek to enter the harbour. But it also reveals the influence of increased European contact: it shows five villages along the waterfront inside the heads on the Otago Peninsula, where but three years previously on his first visit Kent had seen only two villages.\footnote{Anderson has argued that the representation of houses was intended as accurate, so that by counting the houses drawn (51) a rough population estimate is possible. See Anderson, \textit{Welcome of Strangers}, 71. Entwistle disputes this, arguing such representations were simply iconographic. Entwistle, Pers. Comm. 17 September 2007.} These villages are shown as small
clusters of buildings. One village, known traditionally as Tarewai, is marked at Pilots Beach, another, Te Ruatitiko, lies on Te Rauone Beach in the southern lee of Harington Point, and three more, Tahakopa, Omate, and Waipapake, are strung close together just south of Weller’s Rock. Anderson suggests this fragmented settlement pattern, maintained throughout the remainder of the contact period, might be explained by rival leaders taking advantage of the freedom from the threat of attack, and dispersing out from the settlement at Pukekura pa, thus reducing continuous friction and competition.

Herd’s chart also clearly marks the presence at each village of whata, the storage platforms raised high above the ground on poles to protect food supplies from intruding people and pests, previously weka and kiore, and now Norwegian rats. The chart confirms two channels existed inside the harbour entrance, separated by a small sand bar. It also hints at other possibilities. I have argued the area behind Te Rauone beach was burnt in 1817; it is notable that the chart shades this area brown and shapes resembling a series of dunes and sand hills mark it, whereas all the rest of the landscape is a uniform blue.

The settlers’ leader was Thomas Shepherd, nurseryman, land surveyor, disciple of the revolutionary landscape designer Lancelot ‘Capability’ Brown, and one time neighbour of Humphrey Repton. Shepherd’s journal of this visit contains extremely valuable observations of Maori and their landscape. At anchor inside the heads he described ‘an

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113 The names and placement of these villages are found in several primary sources, for example see also Shepherd’s journal, Harwood’s records, and Mantell’s census. The settlement pattern is also summarised by Anderson, The Welcome of Strangers, 169. Anderson has Ruatitiko as Ruatiti, following Mantell. See also Murray Bathgate, The Maori Occupancy of Murihiku, 1000-1900 A.D.: A Geographic Study of Change, (PhD, University of Otago, 1969), 214-15 and Figure 22.

114 Anderson, Welcome of Strangers, 169.


116 There are, however, some intractable and frustrating difficulties with this source material. It seems that the version held in the Mitchell Library (copy in the Hocken G.C. Thomson Collection MS-0440;06) is likely to be the rough draft Shepherd kept on the voyage. The writing is difficult to decipher, and not particularly grammatical. Quotations are from this version unless specified. An alternative typescript version is also in the Hocken Library Thomas Shepherd, "Journal of Thomas Shepherd [Typescript, Alternative Version],” in G. C. Thomson Collection (Dunedin: Hocken Library, 1826), with the transcriber’s note: ‘In the original this paper has a line drawn through it as though it were not to be done’. In the opinion of Una Price the primary version (and hence surely the alternative also) is likely to be a draft
exceedingly good harbour much enclosed on all sides by sloping hills of various heights which prevented any winds from Injuring the vessel the hills were chiefly covered with trees except near this but some patches of fern [sic]. The consistency of the forest cover is confirmed by the contrast apparent when he arrived at the future site of Dunedin, where he observed that:

It is singular the country should thus change all at once from woods to open land which very much resembles some parts in England. There is a complete division between the open land and the woods so much so that the Hills and woods are all formed by nature in curved straight and circular line, part of the open land is level in valleys some on gentle declivities and some hilly.

Constrained by Herd's caution over the threat posed by local Maori, 'being ordered not to go too far into the woods', Shepherd still managed to scramble around Quarantine Island finding 'on not more than 20 square yards 40 different shrubs'; he described the woods' composition along the flanks of the harbour as containing 'pine trees', but much inferior to those seen at Stewart Island. He concluded that there is 'a considerable quantity of timber fit for common purposes (no spars fir for masts), a greater variety of ornamental trees and shrubs than at any other place in New Zealand'.

Shepherd differs from Herd, stating that there were ‘four distinct parties at 4 different villages’ that together comprised about two hundred Maori, who visited the ship over two days to trade. He felt that during their ‘considerable trade’ Maori ‘dealt with us fairly’. Shepherd hints at something of the wider range of products Maori had

of a missing final report for the Company (because of the paucity of personal information, and the specificity of information useful to settlers). Una Shepherd Price, My Family of Shepherds (Scone (NSW): Privately Published, 1988), 7. There are significant discrepancies between the two versions, for example, ‘I saw many fine pine trees ’ versus the alternative ‘I saw but very few pine trees’ and ‘open land which very much resembles some parts in England’ versus ‘some parts good cultivated lands of Scotland or England’. Only the alternative version specifically suggests a whale fishery, and mentions trade in flour, fish, and greens.

118 Ibid., 6 May.
119 Ibid.
120 Ibid. Edwin Palmer also said that he encountered ‘about 2 or 300 natives’, when at Taiier Heads – almost certainly Taiaroa Head – sometime late in 1826. See ‘Reminiscences of Edwin Palmer’ in Begg and Begg, The World of John Boultbee, 299-301.
developed to provision shipping, describing their trade as 'a few tools for potatoes, flour, hogs, greens, fish, etc', as well as flax. 121

Otago Maori had evidently traded quickly with their relatives to the south to gain pigs, which had immediately become a trading staple; indeed, unlike potatoes, pigs did not immediately form a crucial part of the diet, probably because of their overriding value for trade. 122 What 'flour' constituted is unclear, but is probably a reference to a fern root product. It might possibly be wheat, however, since Caddell had told Edwardson in 1824 that the Foveaux Strait Maori grew wheat, as well as cabbages, carrots and turnips. 123 Shepherd indicates such greens were also traded from Otago, though because they could not be stored effectively they were probably not grown in any quantity. Nevertheless, the sealer John Boultbee reported in 1827 that 'Almost at every place on the coast, where people have been in the habit of staying any time, are to be found greens growing wild'. 124 Even European travellers could now increasingly rely on finding fresh green food along the coasts and rivers.

Maori procured a growing range of goods from Europeans in return. That year John Boultbee wrote in his diary from Foveaux Strait that 'The principal trade here is in flax and potatoes, which small vessels from Sydney obtain in barter for powder, ball, muskets, and other European articles, but the latter are most in request.' He also noted with some satisfaction that: '[t]he father of a family will sell a daughter, or two, or three, if required, for a musket each! And it was in this manner that we acquired our little seraglio.' 125 Canoes were still used, but Maori had begun to step European sails, and had abandoned

121 Shepherd, "Journal of Thomas Shepherd [Typescript, Alternative Version]."
123 Anderson, The Welcome of Strangers, 68. Edwardson reported in 1823 that Maori in Murihiku were growing 'Potatoes, cabbages and other kitchen vegetables introduced by the Europeans'. Caddell adds carrots, turnips and wheat. See Anderson, Welcome of Strangers, 68 As noted, Otago Maori may have grown wheat too, since Shepherd reported trading for flour in 1826.
125 Ibid., 60, 102.
paddles for oars that provided greater leverage, and allowed smaller crews.\textsuperscript{126} Many Maori had also developed an addiction to nicotine, and craved tobacco. This habit spread rapidly among men, women, and even children, despite high prices.\textsuperscript{127} By 1843 Shortland was to find that tobacco "supplies the place of small money in all parts of the country remote from the towns".\textsuperscript{128} This habit obviously exacerbated problems with tuberculosis.\textsuperscript{129}

The other articles Boultbee alludes to included blankets, and European clothes, in which many Maori men now dressed, especially when meeting Europeans. This change signals most clearly the prestige in which all things European were held, for unlike iron tools, these clothes were not clearly an improvement on traditional garb. Apart from the fact that they were in almost all cases not as warm or functional as traditional cloaks, wearing used European clothing exposed Maori to the parasites and diseases of the former owners. Many European observers indeed lamented seeing Maori in dirty flea-ridden blankets — some even citing it as a cause of population decline.\textsuperscript{130} The reasons for this reaction are complex. European observations of this period almost all display nostalgia for "natives" in their "natural state". Thus according to Boultbee Te Whakataupuka, ariki of all Murihiku Maori in the early 1820s, who refused to ever wear European clothing, was "the most complete model of elegance".

Te Whakataupuka's attitude to things European is interesting, for though he encouraged trade because of the wonder of the new weapons, tools, and organisms, he did not like

\textsuperscript{127}Anderson, \textit{The Welcome of Strangers}, 154, Riemenschneider, "On Maori Habits of Life," 19. The prevalence of tobacco smoking amongst Maori was very often remarked upon by later European observers. It was already valued in 1831 when the \textit{Vittoria} visited. See Joseph Price, "Extracts from the Diary of Joseph Price," (Hocken Library, 1831). Price mentions that women considered 'an old cotton shirt or a quid of tobacco' as 'ample, nay munificent remuneration' for a night's warmth.
\textsuperscript{128}Shortland, \textit{The Southern Districts of New Zealand; a Journal, with Passing Notices of the Customs of the Aborigines}, 183.
\textsuperscript{129}Riemenschneider, missionary at the Heads in the mid 1860s commented that '[t]he natives generally smoke much and they use only the strongest kinds of tobacco', using short clay pipes making the smoke very hot and sharp. He added that children smoked also. See Riemenschneider, "On Maori Habits of Life," 19.
\textsuperscript{130}For example Guillou, cited in Entwisle, \textit{Behold the Moon} 120.
Europeans themselves, who were ‘selfish’. Like all other Maori, he knew that accessing European technology required engaging with its producers, but he tried to ameliorate this problem by allocating Codfish Island to Europeans as an island enclave, where they would not contaminate his communities.\textsuperscript{131} The use European settler society now makes of Codfish – as an island sanctuary for the New Zealand species unable to survive in their company – is both terribly ironic, and testimony, perhaps, to the wisdom of Te Whakataupuka’s policy.\textsuperscript{132}

The Otago Maori leaders had by now either been to, or heard eye-witness accounts of, Australia, of their own ancestral homelands and beyond. The possibilities of an enormously enlarged physical and conceptual world were opening to them: the potential gain in wealth and mana in managing exchanges with that world was obviously immense. In 1829 therefore, when some of the crew of the British whaler \textit{Clarence} deserted at Otago, Maori were keen to help sail the ship back to Hobart.\textsuperscript{133} The deserters’ fate is unknown, but Otago Maori were clearly determined to acquire Pakeha-Maori to facilitate trade and explain Europeans and their knowledge. This may explain their apparent desire to capture the American sealing ship \textit{Rob Roy} when she visited in 1830 to trade for potatoes and flax.\textsuperscript{134} Certainly, when Taiaroa and Karetai encountered Boultbee in the south in 1827, they were fascinated by his demonstrations of writing in the sand, and competed for his attention and affection, offering him clothing, women, and anything else he might desire, if he only came to live at Otago. He agreed – but then a chance encounter returned him to Australia. The Otago Peninsula probably lacked Pakeha-Maori until the early 1830s, when whaling brought a sudden influx.\textsuperscript{135}

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\textsuperscript{131} Evison, \textit{Te Wai Pounamu}, 39, Richards, \textit{Murihiku Re-Viewed}, 40.
\textsuperscript{132} This was a clever ploy in several respects – for example it made the European men on Codfish Island reliant on Maori from the mainland for much of their food, rendering good behaviour all the more likely.
\textsuperscript{133} \textit{Hobart Town Courier}, 16 January 1830, 2; Will Lawson, \textit{Blue Gum Clippers and Whale Ships of Tasmania}, 58, cited in Church, ed., \textit{Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839}, 143-44.
\textsuperscript{134} Richards, \textit{Murihiku Re-Viewed}, 44.
\textsuperscript{135} Though the surviving lascar lived at Whareakeake just to the north until at least 1823. The settlement at Whareakeake was disbanded at some point in the mid 1820s. According to a descendent of Te Matahaere this was to gain better access to the Titi Islands in Foveaux Strait. Some of the people did move to the Peninsula settlements according to Rawiri Te Maire. F. A. Green, "Letter from Frederick Allen Green to Thomas Hocken, 23 October 1890," (Dunedin: Hocken Library, 1890).
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As Boultbee indicates, southern rangatira soon sought muskets above all else. The first reported use of muskets by Murihiku Maori dates to the summer fighting season of 1825 to 1826, as the Kai Tahu hapu became embroiled in the internecine Kai Huanga feud that pitted one against another. Only two muskets were involved in this conflict, so their effect was almost purely symbolic—but nonetheless powerful. Trade in flax and potatoes soon brought southern Maori considerable numbers of guns: the Vittoria, for example, took 120 muskets to trade on southern coasts in 1831. Maori desire for muskets also stimulated a much more permanent European presence in the south: Te Whakataupuka gained sixty muskets, 450 kg each of powder and ball, and sundry other merchandise, by becoming patron of a shore whaling station established in Preservation Inlet. These guns were urgently required to thwart Te Rauparaha’s plans for conquest. Otgo leaders had similar motives for accepting the Weller brothers’ proposal to a shore whaling station on the Otago Peninsula.

5.6 Conclusion

As trade developed throughout the 1820s, Otago Maori began to alter their lifeways to take advantage of the new tools, materials and organisms trade provided. The especially significant growth of population at Otakou between 1823 and 1826 implied by the increase from two to five villages occurred immediately after trade was revived. Boultbee (who did not visit) heard Otago was the largest and oldest settlement on southern coasts. In 1826 Shepherd estimated there were only 200 Maori present at the Heads,
albeit during the peak of the mutton-birding season.\textsuperscript{141} If the number of whare (50) depicted on Herd’s chart is meant as an accurate count (the point is unclear), then perhaps there was only permanent accommodation in the various villages for about 400 people.\textsuperscript{142} There are no contemporary eye-witness population estimates until 1840, but it is reasonable to conclude that the Maori population of the communities at the Harbour mouth and along the outer coasts inlets continued to grow fairly rapidly after 1826 until reaching a peak in the early 1830s of at least 500 to 600 people, and perhaps over a 1000.\textsuperscript{143}

Throughout this time, the takata pora were infrequent and fleeting visitors, people who brought a trickle of goods, and other species, but who seldom stayed to create habitats for them. Those few takata pora who did linger were required to wholly adapt to Maori culture to survive. Similarly, bar the Norway rat, and to a lesser extent pigs, the significant agents of environmental change that had accompanied the arrival of Europeans—their pathogens, plants and animals—relied on Maori hosts to accommodate them and provide an economic or ecological niche. Otago Maori thus looked out to the newly wider world from within conceptual structures maintained by an essentially unshaken worldview, and unchallenged social structures.\textsuperscript{144} Their atua and ancestors still dwelt undisturbed in the land, and they held the mana.

\textsuperscript{141} Anderson, \textit{The Welcome of Strangers}, 196.
\textsuperscript{142} Ibid. Anderson arrives at this estimate by using ‘Shepherd’s count of whare (fifty one houses in six settlements)’ combined with Elizabeth Durwood’s estimate that eight people might have inhabited a house. Shepherd provided no such count, rather Herd’s chart depicts 51 houses (in five settlements). Entwisle however argues that Herd's depiction is not intended to be accurate, and that the houses marked are simply symbolic of the presence of a village. Certainly D’Urville and his officers recorded larger villages of 30 to 50 houses in 1840.
\textsuperscript{143} This is obviously somewhat of a guess derived from weighing imponderables. However, while the Kai Huanga feud must have heightened mortality during the latter 1820s, there is no evidence of epidemics, and contact, until whaling commenced, was too infrequent to assume widespread venereal disease. Since Maori enjoyed the benefits of steel tools and potatoes, while in the wake of Te Rauparaha’s incursions people from the north were accommodated, it is reasonable to assume a substantial population increase.
\textsuperscript{144} Anderson, \textit{Welcome of Strangers}, 76.
Chapter Six

Making ‘the middle ground’: whaling at Otakou 1831-1848

Soon may the Wellerman come
And bring us sugar and tea and rum,
One day, when the tonguin’ is done,
We’ll take our leave and go. 145
Anon.

6.1 The arrival of the Wellers’ whaling station

In 1826 Thomas Shepherd foresaw that ‘this situation will be made a desirable Settlement at some future period as there are plenty of Flax Timber for Building firewood &c and plenty of fish and good land. There have been a number of whales in the harbour.’ The alternative version of his diary adds that ‘a whale fishery would answer here. We see a number every day.’ 146

The whales that Shepherd saw in Otago Harbour were Southern ‘Right’ Whales (Balaena glacialis australis), so-called because they were the ‘right’ whale to hunt. 147 For large sea creatures 15 to 20 metres long, right whales were very easy prey: they were relatively slow moving (blue and finback whales were simply too fast for sailing ships to have much hope of pursuit), and contained so much oil that they did not sink after death. Shepherd may also have seen humpback whales (Megaptera novaeangliae) or fin back whales (Balaenoptera physalus); the former did often sink after dying and were so lost to their killers – except in such shallow water as Otago harbour, one of the few places where they were hunted. 148

148 Ibid., 26.
Most importantly, right whales were very predictable. Pods of females migrated north along the South Island’s eastern coast between May and October each year, congregating to calve and nurse in sheltered bays. Otago Harbour was an ideal shelter, not only for the whales, but for whalers too, because it provided the very best protection from wild and stormy winter seas that were the worst threat to fragile sailing ships at anchor. The bay whalers soon learnt they could simply wait here for whales to arrive, and then kill the calves, for mothers did not leave even dead young.\textsuperscript{149}

Bay whaling for right whales began in the 1820s once deep-sea whalers had decimated sperm whales, whose oil fetched the highest prices.\textsuperscript{150} Whale oil was very valuable, far more so than any other product the Australian merchants could contemplate exploiting, but a prohibitive duty imposed on colonial oil, only repealed in 1823, initially locked them out of whaling.\textsuperscript{151} The removal of the duty coincided with a surge in demand for whale oil, which greased the bearings of the Industrial Revolution, lit the lamps of Europe, heated homes, and was a crucial ingredient in the manufacture of candles, crayons, polishes, batteries, soaps, and food coatings.\textsuperscript{152} ‘Whale bone’, or baleen, was used in chairs, corsets, and ‘made excellent buggy whips’.\textsuperscript{153}

The success of bay whaling, the removal of the duty, and the strength of the market, prompted Sydney and Hobart merchants to begin shore whaling on Australian coasts and, as the 1820s ended, they extended their operations to New Zealand. Shore stations required little initial capital to establish, and minimized the risks to fragile, expensive shipping. The family firm ‘Weller and Co.’ was among the first to realise the possibilities, and sought to add whaling to their diverse portfolio of commercial interests

\textsuperscript{149} Ibid., 292.
\textsuperscript{150} We do not know exactly when this commenced, but John Boulbee provides confirmation it had begun here as early as 1827, when he, together with Taiaroa and Karei, encountered the American whaler the \textit{Lynx} at ‘Toetoes’, a settlement not far south of the Waikawa river. See Begg and Begg \textit{The World of John Boulbee}, 204
\textsuperscript{151} Morton, \textit{The Whale’s Wake}, 121, 43. The 1809 duties had been £24.18s9d on sperm whale oil, and £8.8s0d on Southern Right Whale oil; these were intentionally set so high that they rendered colonial whaling completely uneconomic.
\textsuperscript{152} Ibid., 52.
\textsuperscript{153} Ibid., 53.
that included substantial land holdings in New South Wales and timber interests in the North Island.154 Perhaps prompted by Shepherd’s descriptions, Joseph Brooks Weller, the eldest of three brothers, presumably inspected the site in the autumn of 1831 near the start of the whaling season and proposed to the Otago Maori that Weller and Co. establish a shore whaling station at Otago.155

The reasons Otago Maori accepted the Wellers’ proposal are probably indicated by the contents of the first cargo they sent from Sydney, comprising ‘6 cases muskets, 10 barrels, 104 half-barrels gunpowder, 1 case axes, 2 iron boilers, 5 casks beef, 1 case whaling gear, 1 case whaling line, 1 pipe gin, 2 puncheons rum, 5 kegs tobacco, and stores.'156

The Otago leaders were especially desperate for muskets. Though the deal is not documented, selling guns in the wake of the Elizabeth affair was frowned upon.157 In the

155 Peter Entwisle, Behold the Moon: European Occupation of the Dunedin District 1770-1848 (Dunedin: Port Daniel Press, 1998), 77. There is circumstantial evidence Joseph Brooks Weller visited Otago himself in 1831 to strike the bargain. He was a passenger on the Sir George Murray, under Thomas McDonnell, which visited New Zealand in 1831. McDonnell contributed names to Stewart Island locations on an 1834 chart, so was clearly familiar with the south. See Sydney Gazette, 2 April 1831, 2, col. I cited in lan Church, ed., Gaining a Foothold, 153-54. For discussion see lan Church, Otago’s Infant Years (Dunedin: Otago Heritage Books, 2001), 23-4. After Herd abandoned the Hokianga and returned the New Zealand Company expedition to Sydney information about Otago would have circulated freely for the first time, but this was surely insufficient to prompt such a venture without first hand inspection. Besides, Maori agreement was required.
156 The Australian, 30 September, 1831, p3 col.2. In Church, ed., Gaining a Foothold, 163. There were 20 muskets in a case. See Church, Otago’s Infant Years, 24.
157 That the munitions were payment is the argument first made by McNab (1913), and followed by L.S. Rickard (1996) and Peter Entwisle (1998, 2006). Not all have agreed: G. C. Thomson argued that the munitions were intended as fowling pieces, and to protect Otago Maori, noting, somewhat contradictorily, that they had already been armed by trade with their relatives. See Thomson, “Papers on sealing and whaling”. Rhys Richards and Richard Weller have recently argued, more plausibly, but in passing, that the Wellers were scared of Maori. See Richards, Murihiku Re-viewed, 61, and Weller, Fortune Lost, 11. This idea has some merit, but I think we must presume the Otago chiefs would have required payment, and the similarity between the payment made to Te Whakataupuka for the establishment of the Preservation Inlet whaling station in 1832 and this cargo is striking. As noted there is also the matter of the presumed visit by the Sir George Murray earlier in 1831, when Joseph Brooks Weller probably proposed the deal to Maori. Tahatu had led the Otago people through the 1820s, and did not die until 1836; he presumably negotiated on behalf of the Maori. Evison has stated that Karetai was already pre-eminent at Otago by this time, however while Karetai was the leader in war, there is no reason whatsoever to suppose Tahatu had
spring of 1830 the Ngati Toa rangatira Te Rauparaha had used the Sydney trader
_Elizabeth_ as cover and lure from which to ambush and kill the paramount Kai Tahu chief,
the upoko ariki Te Maiharanui and his family. 158 Bitterness lingering from an outbreak of
internecine strife (the Kai Huanga, or “Eat Relation” feud 1825-28) meant the Otago
leaders declined pleas to ally with their northern relatives. But the following fighting
season, Te Rauparaha sacked the principal Kai Tahu Canterbury settlements at Kaiapoi
pa and upon Banks Peninsula. 159 Refugees poured into Otago from the north, and were
allowed to settle on the western fringes of Otago Harbour, at Purakaunui, and at Moeraki.
This required an unprecedented collective Kai Tahu response, led by Murihiku upoko
ariki (head chief) Te Whakataupuka, who had just secured substantial arms by allowing
Peter Williams to establish a whaling station at Preservation Inlet. 160 This sudden surge in
Te Whakataupuka’s power would not have wholly pleased the Otakou leaders, and they
every reason to quickly follow his lead.

The Wellers’ guns probably helped Karetai and Taiaroa as they joined their southern
relatives in Kai Tahu counter-attacks against Te Rauparaha over the next two
summers. 161 Despite being unable to achieve any decisive victory, Kai Tahu were more
or less successful; their taua (war parties) fended off Te Rauparaha, who was unable to
consolidate control over any of the South Island and never seriously threatened Otakou
and the other settlements south of Banks Peninsula. 162 Kai Tahu also plundered the
whaling stations under Te Rauparaha’s patronage in Cloudy Bay. This success was a

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160 McNab, _The Old Whaling Days_, 89-90.
161 Evison, _Te Wai Pounamu_, 64-70. Evison relates that the younger fighting chiefs Karetai and Tuhawaiki
led the _tauaki_ of 1832-33, a fighting force of some 350 men, in six large canoes that routed whalers under
Te Rauparaha’s patronage in Cloudy Bay, almost captured Te Rauparaha in ambush, and engaged in a full
battle in which honours were roughly even. Next summer the _taua-nui_ of 700 men in thirty war canoes and
whale boats went north, and again plundered Cloudy Bay, but Te Rauparaha was engaged in other wars and
did not come south.
162 Though in 1836-37 his kinsman Te Puoho led a _tau_ down the West Coast and over the Southern Alps,
in an all-fatged attempt directly engage Murihiku Maori. For details see Atholl Anderson, _Te Puoho’s Last
385-88.
crucial precondition for the Wellers to become securely established on the Otago Peninsula.

The Wellers built their settlement just up ‘the river’ (as the Harbour was known) from their first try works at the rock now named after them. Though it soon after burned down in a fire purportedly consuming 80 houses, the Weller’s were committed, and rebuilt immediately. Their station eventually centred around a large house for Edward Weller, that later became Octavius Harwood’s store, surrounded by numerous whalers’ cottages, stores, and jetties, as seen in J. W. Barnicoat’s pencil sketches of 1844. Figure 8 (below) shows Harwood’s store, the large central building with a prominent flagpole and chimney, surrounded by a neat picket fence and a cluster of timber outbuildings and houses, some roofed with timber, others with raupo. These diverse styles reflect the fact that the station was constructed by a mixture of Maori and European labour.

![Figure 8: J. W. Barnicoat ‘Otago May 1 1844’](image)

The station lay at the southern end of Te Rauone beach. Strung along the beach in close proximity, were the Maori villages of Tahakopa and Te Ruatitiko, which forms the foreground to

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163 J. W. Barnicoat ‘Otago May 1 1844’ 170 x 330 mm, pencil, A B263, Neg. #1930, Hocken Collections.
Figure 9 (below). This picture has a number of interesting details. All the houses in the villages are fenced, almost certainly to keep out pigs. Whata are very prominent. The whata in the left foreground shows the large notches cut into the support poles just below the storage platform that helped prevent rats reaching the food. The area around the village is completely clear of vegetation. Bush or scrub is clearly shown on the rising ground behind the village however. In sum, the overall impression given is of a very neat and orderly settlement.

Figure 9: Barnicoat ‘Entrance to Otago Harbour, May 1 1844’

Whaling on the Otago Peninsula initiated a very different relationship between Maori and Europeans, and between both peoples and their environment. Sealers and flax traders were rare and fleeting visitors; the Wellers’ whaling shore stations were continuously occupied commercial operations where at their peak over 80 men worked through the season while, from the mid-1830s, bay whaling ships brought influxes of hundreds more men who stayed for months at a time. For a few years Otago was the second busiest port in New Zealand after the Bay of Islands, and the fortunes of both Maori and European entwined and flourished at Otago. Their shared world was initially predicated, of course, on the exploitation of the whales, but it is important to emphasise the fact that in the aftermath of the whales’ destruction and the virtual abandonment of shore whaling, some Europeans stayed on, and were soon joined by others, so that the years between 1840 and

164 J. W. Barnicoat ‘Entrance to Otago Harbour, May 1 1844’ 174 x 655 mm, pencil, 94/272, Neg.#2076, Hocken Collections.
1848 saw a deepening of what had begun to develop during the whaling years – a mixed community with a new relationship to the environment of the Otago Peninsula.\textsuperscript{165}

The whalers were always dependent on the protection and prosperity of their Maori hosts; as Maori became drawn into an international market economy the fortunes of Maori likewise became entwined with those of the whalers. Otakou Maori provided the Wellers with whalers, and the on-shore labour force needed to establish and maintain the station; Maori men built homes for the Pakeha whalers, while women comforted the whalers throughout the season, and gradually formed more permanent partnerships. They supplied a range of commodities the Wellers could sell at considerable profit in Sydney, and protected them from potential attack from other Maori. In return the Wellers’ station and store gave Maori reliable access to a wide range of European goods, especially boats, iron tools, utensils, and clothes, while their shipping directed and funnelled a large and diversified export trade, and allowed leaders to regularly visit Sydney. Otakou became a small town, attached to a flourishing port, with far-flung trade.

The period between 1831 and 1848 on the Otago Peninsula was thus a brief window of time in which Maori and European came to coexist in relative equality, and intimate proximity. However peculiar they perceived one another to be, the leaders of both groups became acutely aware their success was predicated on the flourishing of the other. They learned to understand the forms and protocols of one another’s social structure, and the station leaders married Maori women of mana whose descendents often became significant figures in the community.\textsuperscript{166} As the two alien cultures sought accommodation they created a cultural sphere in which they could negotiate exchanges, and gradually come to a mutual tacit understanding and trust. For, while Europeans here clearly came to a strange place unprecedented in their experience, it was a world being created anew for Maori also. This was the hinge between an old cultural, economic and ecological order, and the imminence of something new wrought of people and their place on the Otago Peninsula.

\textsuperscript{165} Church, \textit{Otago's Infant Years}, 10.
\textsuperscript{166} Morton, \textit{The Whale's Wake}, 212.
It was, in short, an example of what Richard White has termed the making of ‘the middle ground’, the place in between: ‘in between cultures, peoples, and in between empires and the nonstate world of villages.’ It was an emergent cultural space in which an array of social relations had to be continuously negotiated, ranging over sexual contact, dispute resolution, labour ‘law’, and property rights. In the process a community began to emerge that was created from two cultures and was thus new to both. The remainder of this chapter explores in more detail various facets of the accommodations and congruencies that constituted the making of this middle ground at Otakou on Otago Peninsula, and examines the new environmental relationships that emerged as a result.

6.2 A town, a port, and its trade: a new economic order

In the first few years, as the Wellers enjoyed a monopoly on whaling on Otago coasts, and Otakou Maori monopolised trade through the Wellers, both prospered. The Wellers exported over 200 tuns of oil each year 1834 until 1838. In 1835 they tried out 97 whales, retrieved 430 tuns of oil, and cleaned 20 tons of ‘bone’. According to a contemporary whaler, John Hughes, the average return for local coastal stations was 5 tuns per whale (which was very low by global standards), so this is a very low ratio of oil to whales killed, perhaps indicating considerable wastage, but the Wellers still might have realized almost £10,000 on the London market that year. Given that it cost perhaps £1500 to

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167 Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region 1650-1815* (Cambridge: Cambridge University Press, 1991), x. White used the term in the context of North American Indian and European adjustment, admittedly over a much longer time span, and in a much larger area. However truncated, the intensity of whaler and Maori involvement clearly forced a rapid series of accommodations that, I argue, justify the comparison.

168 For oil to whale ratios see Rhys Richards, *Murihiku Re-Viewed* (Wellington: Lithographic Services, 1995), 64. Oil prices are quoted in George Weller’s letter to his brother Edward of 23 July 1835. He states the price for oil in London was £26 to £27, with bone selling at £100 to £110. Church, ed., *Gaining a Foothold*, 211-12. Fortunately for the Wellers, whale oil from New Zealand was treated as Australian (and therefore colonial) produce, enabling access to the lucrative English market at a minimal duty. When, in response to George Weller’s own enquiry of the Colonial Office, it appeared the prohibitive foreign duty might be imposed, it was feared whaling in New Zealand would cease. Regardless, the Wellers often sold some oil in Australia. Not all oil shipped reached market – leakage from casks was a great problem, and the Wellers once lost enormous profits after heat swelled the casks while in port in the West Indies. This was one of the reasons why coopers, who constructed the casks, were indispensable, and very highly paid. If it had all reached the London market, the Wellers’ 430 tuns of oil and 20 tons of bone might have fetched over £13,000.
£2000 to establish a shore station, and somewhat less to run one each season thereafter, the cause of the whalers' enthusiasm for the slaughter is obvious.169 London prices for whale oil and bone almost doubled to £50 and £170-80 respectively during 1836 and 1837 after the 'glorious news' of 'the total failure of the Davis Straits fishery' as George Weller exuberantly described it in an 1836 letter to his brother Edward, in the expectation of clearing £8600 on that year.170 These prices prompted the Wellers to extend their operation considerably, and they established further 'fisheries' above Pilot's Beach and on Te Rauone Beach adjacent to Te Ruatitiko in 1836 and 1837,171 and later stations at Purakaunui, Taieri Island, Timaru and Banks Peninsula, in addition to purchasing oil from independent traders elsewhere on southern coasts.172

George ought to have considered more carefully the business implications of the fact that, by his own admission, people in Sydney had gone 'Black Whaling mad' since the 'glorious news', while 'no less than 60 sail of American whalers', were expected to join the shore stations on the south-eastern coasts.173 Very unwisely he trumpeted his success abroad, helping to prompt a flood of competition. Eighteen thirty-six was perhaps the Wellers' best financial year, but American bay whalers were already 'swarming' on the coast, (four or five fishing Otago Harbour in 1836)174, and killed many whales.175 That year John Hughes deserted the Wellers to establish his own station at Moeraki, while in 1837 Johnny Jones established another rival station at Waikouaiti (present day Karitane).176 Matters were not helped either by the publication in *The Australian* in January 1837 of the latitude and longitude of Otago, 'famous in point of obtaining right

170 Letters from George Weller to Edward at Otago, 29 February 1836, 23 April 1836, 4 March 1837 in Church, ed., *Gaining a Foothold*, 230-232, 236-37; 269-72 respectively.
171 Entwisle, *Behold the Moon*, 86.
172 Church, ed., *Gaining a Foothold*, xvii.
173 Letter from George Weller to Edward at Otago, 29 February 1836,' in Ibid., 175-77.
174 Quotation Capt Parkinson of the *Bee*. In Church, *Otago's Infant Years*, 33. This is the number of ships fishing in the harbour according to Shortland, though he mistakes the year as 1835. See Edward Shortland, *The Southern Districts of New Zealand; a Journal, with Passing Notices of the Customs of the Aborigines* (London: Longman, Brown, Green & Longmans, 1851), (Appendix VI) 300-01.
175 Shortland's figures do not suggest this, but then his figures are not always correct, and need to be read alongside the Wellers' accounts. Shortland, *The Southern Districts of New Zealand* (Appendix VI) 300-01.
176 Church, *Otago's Infant Years*, 12.
whales', together with precise descriptions how to locate and enter the harbour. In fact, before the Scots settlers ever arrived over one hundred whaling ship visits had been made to Otago coasts, with over 90 ships entering the harbour.

As a direct result, whale numbers diminished rapidly; by 1839 the Wellers took only 65 tuns, and lost two ships (the Dublin Packet and Henry Freezing). The station was reduced to two whale boats by 1840, from its peak of eleven in 1835; only 10 tuns of oil were taken in 1840 and 1841 while bay whalers had a similar lack of success. Less oil, fetching lower prices, combined with a series of shipwrecks, and Edward's ill health, spelt the Wellers' involvement. From 11 December 1841 the station was advertised for sale in the New Zealand Gazette and Wellington Spectator. The Wellers' woes only continued: the failure of their extensive land speculation in New South Wales caused their bankruptcy in 1842. Yet shore whaling did not end entirely. Over the next few years one or two boats still put out from the harbour as the occasion arose, and bay and deep sea whalers continued to call in regularly. However, the character of occupation gradually took on a new form, as the European occupants began to search for ways to sustain themselves.

Throughout the years 1831-1841 Maori men formed a substantial part of the Wellers' labour force. Thus a primary set of relations in which accommodation had to be reached was in organising that labour, and coming to terms over its price. Maori were employed

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179 Church, Otago's Infant Years, 12.
180 Entwisle, Behold the Moon, 90.
181 Richards, Murihiku Re-Viewed, 64.
182 The advertisement gives a clear indication of the extent of the Weller's station. It describes 'Premises at Otago. These premises lately occupied by G & E Weller, at Otago, consisting of dwelling house, two storehouses, large carpenter's workshop and capital range of outhouses with large garden well stocked with fruit trees in bearing. Also a large blacksmiths shop. Also a yard for shipbuilding, with large work shed, saw pit, blocks, launching ways, steam box etc. There is a large quantity of seasoned timber lying in and near the yard. The above is a capital opportunity for parties wishing to establish themselves in the Middle Island.' For reasons contributing to the Wellers' demise see Weller, "A Fortune Lost: The Joseph Weller Family in New South Wales and New Zealand 1824-1890," 28-33. Quotation at 33.
as shore whalers, and by bay whalers using the harbour as a base for the season; they worked on much the same terms as Europeans, sometimes rising through the ranks to become headsmen of their boats.\textsuperscript{183} Shortland estimated that Maori provided half of the Wellers' whalers over the first four years, and one third thereafter.\textsuperscript{184} The Wellers also employed Maori to clean 'bone' (scraping the baleen plates free of gum) and, when not needed for this primary task, as the general labour force for the station. Although at least one of the Weller brothers (first the eldest Joseph, and then the youngest, Edward) was always present while the station was in operation, Octavius Harwood, the Wellers' store clerk and station manager controlled the day to day operation of the station after his arrival in 1837. Harwood organised the whaling crews and Maori labour. Between May and October of 1838 the journal of describes 'Mowrays' [sic], whom he soon came to name as individuals he knew well, employed in tasks as various as building and repairing fences, houses (for themselves and others) sheds, and roads, fetching the very large quantities of wood and water required by the station, making spun yarn with which to bind the whales' head wall that they also constructed, removing sand banks, transporting provisions to the outlying stations at Brokenewy (Purakaunui) scraping boats, digging ditches, actually whaling, and helping to cut whales in and try them out when the stations were overwhelmed with whales.\textsuperscript{185} In summer whaling ceased, and the station ceased to be the focal point of Maori labour. Nevertheless there was still considerable involvement between the two groups; Harwood, for example, employed Maori women to tend and harvest his potatoes.\textsuperscript{186}

Harwood enforced his standards of punctuality and diligence by stopping the Maori employees' rations of 'grog', or even provisions and tobacco, for persistent absences.\textsuperscript{187}

\textsuperscript{183} The \textit{Columbus}, for example, shipped four Maori from Otakou for the whaling season of 1838. See log of the \textit{Columbus} Tuesday 1 May, in Church, ed., \textit{Gaining a Foothold}, 305. Whalers were paid a 'lay', a share of the overall profits, in proportion to their importance. According to Shortland a chief headsmen typically received 1;18, a headsman 1;28, boatsteerers 1;60, a cooper or carpenter 1;70 (or monthly wages), and an ordinary boatman 1;100. Shortland, \textit{The Southern Districts of New Zealand; a Journal, with Passing Notices of the Customs of the Aborigines}, 109.

\textsuperscript{184} Edward Shortland, "Outwards Letter Book 'a' 15 September 1842 to 13 March 1845," (Hocken Library, n.d.).


\textsuperscript{186} For example Ibid. Harwood records employing 12 Maori women at 2/6 a day to harvest potatoes.

\textsuperscript{187} For one such sequence see Ibid., 30 September, 5 October, 6 October, 9 October 1838.
He did much the same with the European whalers; when they went on strike ‘on account of the meat’ he stopped their grog, and Maori began to man some of the boats instead.\textsuperscript{188} All employees, Maori and European waited to be paid off at the end of the season, running up credit in the interim; control over this truck system was another tool Harwood could use to enforce discipline.\textsuperscript{189} Though some accounts have stressed a fear of Maori violence, Harwood never reported any eventuating, and his son Octavius Jr. stated his father ‘was seldom afraid of the natives but there were times he felt great anxiety regarding many of the abandoned foreigners.’\textsuperscript{190} Harwood and the Maori leaders were quite conscious of, and cared for, the depth and diversity of the mutual benefits they provided one another.

The Wellers’ core business in New Zealand was always whaling, but they tried hard to diversify their operations. Their store exploited their position at the geographic hub of shore whaling and became a trading post that men from all the other rival shore stations strung along the coast were forced to have recourse to, as did bay and deep sea whalers in need of provisioning. They exported a range of local resources to Sydney and beyond: the very first return cargo carried by the \textit{Lucy Ann} to Sydney comprised 100 spars, 10,649 feet of planks, 1200 trennails (long wooden pins to fasten the planks of a ship to its timbers) and 1/2 a ton flax.\textsuperscript{191} Besides whale products, they eventually exported potatoes, pork, grain, timber, seal skins, mutton birds, dried and smoked fish, flax, raupo ‘coopers’ flags’, and Maori ‘curios’.

Maori expertise and labour was necessary for most of these trades. Leaders organised their people to increase the production, harvest and transport of timber, flax, pigs, and potatoes in particular, selling either to the Wellers or to provision the men on the bay whalers’ ships. By 1834 Maori under the overall ship of Tahatu had organised their

\textsuperscript{188} Ibid., 27 June, 2 July 1838.
\textsuperscript{189} Ibid., 20-21 October 1838.
\textsuperscript{190} Octavius Jnr Harwood, "Notes on the Settlement of the Otago Peninsula," (Hocken Library, n.d.). Harwood himself recorded potentially violent disputes with Europeans, and not Maori.
labour and land to develop a truly substantial export trade via the Wellers' ships, which sent 30 tons of potatoes in a single shipment to Sydney in August that year.  

These trades most obviously profited the Wellers. But in return for their labour and production Maori leaders gained unprecedented access to the wider world. The leaders regularly used the Wellers' ships as transport to and from Australia. In doing so they tried to establish friendly relationships with colonial commercial and political s. When Karetai visited Sydney in 1833 for example he was at pains to stress that 'his countrymen want to live in peace, and be protected.' They also gained access to a panoply of European goods. Octavius Harwood's journal and accounts show he dealt largely with Maori of mana, who negotiated exchanges not only for themselves, but on behalf of their people. Something of their personalities shows through even in their purchases. For example at various times Karetai, who had a number of wives, purchased items such as iron pots, knives, clothes, blankets, boots, trousers, alcohol, tobacco, and sugar, paying with potatoes and seal skins. Taiaroa on the other hand, showed an early fondness for alcohol, and fine clothes. Such daily contact over time was a pre-requisite for trust and mutual esteem to develop, as in some cases it clearly did; for example, in 1842 Tuhawaiki, bought a whale boat on the promise of subsequent payment of three tons of flax and a ton of pork, which contract he faithfully fulfilled over the course of 1843.

Sealing and whaling boats changed the structure of daily Maori life more than any other European technology. That Maori valued them as such is evident in the fact that they were far and away the most significant and expensive items the Maori purchased throughout the 1830s and 1840s. Prices have been described as high, but in fact

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194 Octavius Harwood, "Accounts Ledger of Store Customers and Any Debts Incurred," (Dunedin: Hocken Library, n.d.). Haberfield recorded that Tahatu had visited Sydney 'several times'. See MS-0439;183 'Transcript of reminiscences of unidentified person' [Haberfield]. Karetai certainly went to Sydney at least twice, and Taiaroa at least once.
195 Ibid.
196 Other such transactions recorded include: 19 and 20 September 1838, the Columbus sold two whaling boats for potatoes, pigs, and firewood. Cited in Church, ed., Gaining a Foothold, 330. Harwood sold a whale boat for about four tons of potatoes in 1839. Atholl Anderson, The Welcome of Strangers (Dunedin: University of Otago Press, 1998), 129. Also in 1839, Johnny Jones 'purchased' (that is, renewed his right to
varied considerably, and on the whole were not exorbitant, given the scarcity of supply and the intense demand. The Maori switch from canoes to European boats is evident in the changing composition of Kai Tahu taua— that of 1833 (the taua iti) consisted of six double canoes, that of 1834 (the taua nui), 29 vessels in a mixture of canoes and European boats, while Tuhawaiki’s taua of 1839 was a flotilla of at least ten boats, but no canoes. Harwood described ‘fishing double canoes’ as common on his arrival in 1837; in 1840 they were seen rotting on the shore at Otakou. By 1843 Shortland had difficulty convincing Maori to guide him on coastal trails now abandoned and overgrown for, as he remarked, where possible Maori had:

ceased to travel by land...since they have so generally obtained possession of whaling and sealing boats; for these are easily managed, and by few hands. The large double canoes they formerly had were too valuable a property to be possessed by any but the wealthy, and required a more numerous crew for their management.

operate from) ‘the bay of Waikouaiti’ from Karetai and Taiaroa for a sealing boat, a tierce of tobacco and ten dozen cotton shirts. ‘John Jones Land Claim No. 124’. Hocken Collections, MS-0439/13/2-5/1. Also that year Jones purchased land between Waikouaiti and Pleasant Point, from James Bruce, who paid two sealing boats and fifty pair of blankets to Karetai and Taiaroa. See Church, ed., Gaining a Foothold, 371. Edward Weller likewise purchased rights to the land between Waitaki and Banks Peninsula from Koroko for a whaleboat and ‘sundry clothing’. Harwood, "Copy of Octavius Harwood Journals," 1839. Harwood sold another boat in May 1841 for pigs. Harwood, "Copy of Octavius Harwood Journals," 31 May 1841. In 1842 Tuhawaiki received a whaling boat from Harwood for which he agreed he would pay three tons of dressed flax and a ton of potatoes, orders he fulfilled over the course of the following year. Harwood, "Accounts Ledger of Store Customers and Any Debts Incurred."


198 In 1837, for example, Edward Weller sold sealing boats for 1000 baskets of potatoes each, which George complained left far too little profit from an outlay of £38. Actually, presuming for the sake of argument that a basket weighed 35 lbs, and were worth £5 a ton to the Wellers in Sydney (George’s lower estimate), the sale price of over £75 was reasonable. George Weller to Edward Weller, 16 October 1837’, cited in Church, ed., Gaining a Foothold, 280-81.

199 In September 1839 Harwood noted Tuhawaiki had arrived with ten boats and 60-70 men. Harwood, "Copy of Octavius Harwood Journals," 8, 12 June 1839. The log of the Piraki whaling station describes five of Tuhawaiki’s boats and four of Karetai’s boats returning to the south from this expedition on 7-8 November 1839. Cited in Church, ed., Gaining a Foothold, 389. Anderson states, without giving his sources, that some twenty boats were involved. Anderson, The Welcome of Strangers, 86, 125-26.

200 Harwood makes this comment in a note attached to an undated list in MS-0439/14/2, Hocken Collections. Cited in Church, ed., Gaining a Foothold; Historical Records of the East Otago Coast 1770-1839, 298, fn210. For largely complete abandonment by 1840 see Anderson, Welcome of Strangers, 125-26.

By the mid 1830s as the benefits of such technologies became apparent the Otago Maori must have felt fairly secure and cautiously optimistic. They had successfully fostered European settlement in their midst, and with access to new technologies, materials, organisms and markets their economy and population were thriving. Te Rauparaha’s raids may have smashed the northern settlements, but they also welded Kai Tahu into a much more cohesive entity, swelled the southern population, and meant the Otago leaders were well placed to assume key ship positions in the nascent iwi, as demonstrated in their roles in fending off Te Rauparaha. Increasing contact between the worlds of the Otakou Maori and the Wellers entailed enormous risks however. Their increasing intimacy meant that more and more members of an entirely foreign ecosystem penetrated their environment. In this sense, the creation of a middle ground had devastating consequences.

6.3 He Taru Tawhiti: ‘Afflictions from Afar’

From the mid 1830s, a spate of epidemic diseases struck southern Maori, with profound and far-reaching effects, that extended far beyond a substantial loss of population, to ultimately encompass changes to the economic, social, ideological and ecological patterns of Maori life on the Peninsula.

One series of incidents is particularly important, because it precipitated both a crucial political union, and the first and most catastrophic of the epidemics. In July 1834 the Wellers were alarmed by unprecedented threats to their station and to shipping in the harbour from the taua nui, a large war party led by Te Whakataupuka returning from a campaign against Te Rauparaha. Trouble had been sparked by the presence in the harbour of one of Captain Kelly’s ships, after the Maori had issued an explicit written warning to Kelly via the Wellers the previous year never to send his ships there.²⁰³ The sudden death


²⁰³ On 21 May 1833 Joseph Brooks Weller wrote this note from Otago to Kelly; ‘This is to certify that the natives of Otago have threatened to take your ship from Capt. Lovat stating that you had formerly killed or wounded several years ago some of their people and that would have revenge. Most of the people also
of a chief's infant further inflamed a tense situation. Maori blamed the Europeans, who now believed the Maori had decided to destroy both the whaling station and all the shipping in the harbour. The whalers readied the Wellers' ship the *Lucy Ann* for defence, and threatened to hang Tuhawaiki, then visiting Sydney, if they were attacked. The success of this tactic encouraged Captain Anglim to persuade Karetai and his family, along with another chief, to come aboard the *Lucy Ann*, at which point he promptly set sail for Sydney, taking the eminent family hostage.\(^{204}\)

In Sydney, Karetai and his wife became 'guests' of the Reverend Samuel Marsden, who gave them Christian instruction, and introduced them to Governor Bourke 'in order that he might tell his own story'.\(^{205}\) Karetai told Marsden he wanted missionaries, not guns. The Governor directed Marsden to buy him presents.\(^{206}\) Other men had his ear: Joseph Weller, Captain Anglem and Jacky Guard (whose whaling stations had been plundered by the taua nui, while he was shipwrecked and his wife and children kidnapped) spread alarm in the Sydney papers, which breathlessly reported the 'terrible murders on the New Zealand coast' where 'massacre stalks abroad with impunity', and called for a 'crusade against the murderous and bloody savage'.\(^{207}\) A letter written by Joseph Weller appeared in the *Sydney Herald* of 16 October 1834 arguing that were it not for the relatives of the leaders held in Sydney the station would have been burnt and pillaged.\(^{208}\) The merchants

\(^{204}\) That they were hostages in the eyes of the Europeans is made clear in two letters. 'Letter from James Backhouse to Thomas Fowell Buxton, Sydney, 5 February 1835' and 'Letter from Samuel Marsden to T.F. Buxton, Parramatta, 11 February 1835,' cited in Church, ed., *Gaining a Foothold*, 200-202. James Backhouse was a member of the Society of Friends, who had discussed the matter with Marsden, while Thomas Buxton was a prominent anti-slavery campaigner and Member of Parliament.

\(^{205}\) Karetai arrived in Sydney on 21 September on the *Joseph Weller*. In a letter dated 25 September, Marsden says 'Since I began my letter a chief and his wife have arrived from the South Cape and are with me. His object is to get a missionary to reside at his settlement.' McNab *Historical Records* vol.1, 720. Stack records Karetai received instruction. See James Stack, *More Maoriland Adventures of J. W. Stack* (Dunedin: A. H. and A. W. Reed, 1936), 114-15.


\(^{208}\) *Sydney Herald*, 16 October 1834. Cited in Ibid., 197-98.
petitioned the Governor for aid, and he obliged by sending the warship H.M.S. *Alligator* to South Taranaki, and arming the Wellers with swivel guns and a long gun.  

Yet in December a returning ship’s captain reported in Sydney that ‘the natives of Otago were very civil…so much so that Mr. Weller has resolved to remain a few months longer, in expectation that hostilities would cease between the natives and Europeans.’ It seems highly likely that the Wellers and the Otago Maori had renegotiated terms, and sealed their renewed understanding in the fashion familiar to both cultures, by a political marriage. The timing is a little uncertain, but we do know Edward Weller married Paparu, Tahatu’s daughter sometime between 1834 and early 1835. The Otago Maori and the Wellers had successfully negotiated an uneasy peace. From this point, personal ties increasingly paralleled and cemented a strategic and commercial alignment of interests. Tahatu, Karetai, Taiaroa, and other Otago leaders fostered complex relationships with the Wellers. Edward Weller learned to speak southern Maori, and after Paparu’s death in childbirth in 1838, formed another diplomatic liaison with Nikuru, Taiaroa’s daughter. By 1836 George Weller felt able to advise Edward that, in the case of rival firm Campbell and Co. attempting to set up in the harbour as competition, he should ‘let the Natives give him a benefit’.

George did not know the Otago Maori were now in no state to give anyone ‘a benefit’. The first of a series of catastrophic diseases had struck them, suddenly, without warning, and from which for many there was no escape. Measles (*Rubeola morbilli*) was the first and worst epidemic. While Karetai was detained in Sydney the *Sydney Gazette* reported that a: ‘disease resembling measles has recently attacked infants in Sydney, and now

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209 *Sydney Gazette*, 18 October 1834; ‘George Weller to Edward at Otago, Sydney, 7 August 1835,’ in Ibid., 199, 214.
210 *Sydney Herald*, 1 December 1834, p2, col.7. Cited in Ibid., 205.
211 Entwisle, *Behold the Moon: European Occupation of the Dunedin District 1770-1848*, 84 fn 490. G.C. Thomson later wrote ‘from the time of the Kelly mass. the Maori had no time for the Pakeha the trouble in 1831 was mainly due to this and until Edward Weller married Nikaru the daughter of Taiaroa the Wellers went in fear of their lives.’ See G.C. Thomson, *Miscellaneous Handwritten Notes* MS-0439/192.
prevails to some extent. The faculty speak of it as being of a trifling nature, and not liable to serious results if promptly attended to.\textsuperscript{214} What was trifling to Europeans was often fatal to Maori, but neither comprehended the risks they took in mingling.

Measles can only persist in large dense clusters of people that constantly supply susceptible hosts, where it typically becomes a fairly innocuous childhood illness – for once the human host survives infection (typically after about two weeks) they are immunized for life.\textsuperscript{215} As John McNeill puts it, measles is therefore one of ‘the diseases of civilization par excellence: the peculiar hallmark and epidemiological burden of cities and of countryside in contact with cities.’\textsuperscript{216} Maori had never encountered measles before. In February of 1835 Marsden reported Karetai and his wife were still in Sydney, now ‘very unwell, so much so indeed that I am afraid the woman will die of grief.’\textsuperscript{217} Though they did not die, when they were returned to Murihiku they brought the measles virus with them.\textsuperscript{218}

Measles is transmitted via droplets of moisture, expelled in the speech, coughs and sneezes of an infected person and inhaled by a new host. It is therefore extremely infectious. Many Maori practices which had hitherto been harmless, such as storing, preparing and eating food communally, became vectors for the disease. Typically, in a


\textsuperscript{216} John McNeill, cited in Ibid., 46.

\textsuperscript{217} ‘Letter from Samuel Marsden to T.F. Buxton,’ in Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770–1839, 201-02.

\textsuperscript{218} Stack, More Maoriland Adventures of J. W. Stack, 114-15; Harry Evison, The Long Dispute: European Colonisation and Maori Land Rights in Southern New Zealand (Christchurch: Canterbury University Press, 1997), 69; Virginia Perry, ed., Eliza’s Journal – a Gentlewoman’s Experiences in the Late 1850s (Dunedin: Virginia Perry, 2004), 263. It has been argued that Tipu also brought measles to Murihiku, see Bill Dacker, Te Maemae Me Te Aroha (Dunedin: University of Otago Press, 1994), 14; Anderson, The Welcome of Strangers. However Karetai and his family are identified as vectors first and foremost because Karetai specifically told Stack that this had been the case, while Tipu is not because he did not travel back to New Zealand with Karetai. The Sydney Herald, 12 March 2, col.1 reported the brig Children had departed on 9 March with ‘Wakahau, Jackey White, wife and child’. Church, ed., Gaining a Foothold, 206. In a letter written to Edward on 9 May 1835 George said ‘I have sent Jacky White and family who have been very troublesome and urgent to get down again.’ Church, ed., Gaining a Foothold, 208-09. Jacky White was the whalers’ ironic name for the heavily tattooed Karetai. Evison also states measles arrived at Otakou with Karetai in Evison, “Karetai ?-1860,” Dictionary of New Zealand Biography v01, 216-17.
virgin soil epidemic such as now occurred amongst southern Maori communities, almost everyone becomes sick, and many die.219 In 1852 Karetai told Stack that the epidemic carried off the bulk of the population at Otago, and along the southern coast.220

The spread of the epidemic was exacerbated because Karetai and his companions were first landed in Foveaux Strait – and met there the Kai Tahu taua (war party) assembled from all their various southern settlements to bring battle to Te Rauparaha. Three hundred men are said to have died on Measley Beach alone, including Te Whakataupuka, ariki of the Murihiku Maori. Of nine canoes that arrived there, only crew enough for one are said to have survived, and as they returned home they spread the sickness everywhere.221 By June the disease was entrenched at Otago.222 Many Maori probably died purely because of the fever and other effects of the disease, but the fact entire communities were stricken meant no one could aid the sick. William Palmer recalled

on his visit to Otakou, the Maori so bad with the fell disease that, for want of attendance, they have crawled to the stream for water, and died on the spot... One affecting instance he gives of a Maori father killing his young son and burying him in the sand, and who, when threatened to be brought to task for his crime, said the lad's mother had just died, and that he himself would be dead in a short time, and, as there would be no one to look after the child, this was the best thing he could do. The poor fellow predicted aright, for in less than forty-eight hours he too was lifeless.

219 Contra Anderson, Welcome of Strangers, 191 there are contemporaneous accounts of this epidemic at Otakou, from people such as the Wellers and Johnny Jones, that place it in time quite precisely. These include reports in the Sydney Monitor 3 October 1835, Sydney Herald 21 November 1836 and Sydney Monitor 21 November 1836. There is also Edward Weller's remark in a letter to George on 12 September 1835 that the Maori were too ill to clean bone. See Church, Gaining a Foothold, 215-217, 252-53. This means we cannot dismiss the subsequent Maori recollections recorded by Europeans, which all stress the scale of mortality. Evison provides a good summary of these records, including an eyewitness to a subsequent epidemic at Pigeon Bay, Canterbury in 1848-49, in which almost half the population purportedly perished. See Evison, Te Wai Pounamu, 101-02 fn15.


221 'William Palmer's Reminiscences,' Evening Star 4 July 1891. Recollections of the spread of this particular epidemic are recorded by several early European residents or visitors, including Watkin, Haberfield, Palmer, Shortland and Jollie. Jollie recorded that 'm]easles, one of these diseases, was brought by ship to the Bluff, and carried to the Northward by Maoris along the coast, who voyaging by day and landing for the night at different pahs, left the disease behind, and still carried it forward until the principal Maori settlements were all infected. The mortality was so great that in some cases the survivors could not bury their dead.' R. Jollie, "Recollections of Early Days in New Zealand, Ca 1847," (Hocken Library, 1847), 7, Anderson, The Welcome of Strangers, 193.

222 'Extract from William Palmer's Reminiscences,' Evening Star, 4 July 1891. Cited in Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839, 162. Also in Evison, Te Wai Pounamu, 85.
Measles cripples the immune system, allowing other microbes to flourish. The lungs are very vulnerable to attack in this situation, so that pneumonia and pulmonary tuberculosis are particularly dangerous threats. The tohungas’ remedy for the measles was to expose their suffering people to cold air, or immerse them in cold water up to the neck. These treatments were recipes for pneumonia, influenza and tuberculosis. By November of 1836 the *Sydney Herald* carried the news that measles had killed ‘at least 600 of the natives’ in the south. That report also carried news of the incursions of another scourge, influenza, transmitted by the crew of the *Sydney Packet* when they visited Otakou about late October. This virus is breath spread and has a very short period of incubation of only one or two days; it is therefore very infectious, and spreads rapidly. The *Sydney Monitor* soon reported that: ‘Nearly the whole of the black and white inhabitants of New Zealand are suffering under an attack of influenza. Many of the natives have died from its effects.’ The speed and scale of mortality is attested to by the fact that Europeans later found many skeletons on the Peninsula, lying as they had died, unattended, and unburied.

Measles and influenza epidemics had a devastating impact, but at least they disappeared as quickly as they had come. Tuberculosis, known to Maori as ‘te mare’, the cough,
had an equally terrible effect when it arrived, for in virgin soil people have so little resistance that it races through lymph channels to infect numerous organs.\textsuperscript{231} On 23 June 1840, soon after his arrival, Watkin, the gloomy Wesleyan missionary at Waikouaiti met a Maori man who had lost six children in quick succession to the disease.\textsuperscript{232} Like the other diseases, tuberculosis struck poor and powerful indiscriminately, but unlike them, it lingered and was the leading cause of mortality amongst Maori for decades to come. Thus, as Crosby put it, endemic diseases such as tuberculosis and venereal disease "provided the ground bass for Maori history in the nineteenth century."\textsuperscript{233} Tuberculosis also killed Europeans: Joseph Brooks Weller developed consumption – pulmonary tuberculosis – and died here in 1835, to be shipped home in a puncheon of rum. Tahatu, principal chief at Otago, who died in 1836, was among the indeterminate number of Maori victims.\textsuperscript{234} Thus the two men who struck the deal to allow the first European settlement on the Otago Peninsula shared the same fate.

Since no reliable data exist for the Kai Tahu population of the 1820s and early 1830s the demographic impact of this series of diseases is very difficult to ascertain, and has been much debated. The accounts of European observers from the early 1840s and after almost all claimed the Maori population centred on Otakou had once been much larger, perhaps as high as two or even three thousand, but had suffered catastrophic decline from the 1830s to reach the few hundreds they found. For example, several of the French officers

\textsuperscript{232} Rev. James Watkin, "Transcript of Journal of Rev; James Watkin " (Hocken Library, 1840-1843).
\textsuperscript{234} Though Harwood recorded he died in 1838. See G. C. Thomson papers, Hocken Collections, MS-0438/45.
who visited in 1840 stated this, perhaps the most reliable being the opinion of Elie le Guillou, Surgeon-Major of the Zelee:

At the present time the population of Otago does not exceed two hundred, yet a scant ten years ago the total reached at least twelve hundred. This decrease may be attributed perhaps to migration, to a disease similar to measles, which was raging here four or five years ago and finally to a lack of suitable clothing..."235

Historians have struggled to substantiate such opinions. Some have accepted them fairly uncritically, while others have doubted population decline was so severe.236 The work of demographer Ian Pool has been influential.237 Pool corrects the notion prevalent in the nineteenth century and long into the twentieth, that the general Maori population was catastrophically reduced by pandemic diseases. As he argues, a priori a small and dispersed population makes pandemic disease, or even regularly reoccurring and widespread epidemics, highly implausible.238 Recent nationalist histories by Belich and King, that downplay the impacts of disease, rely heavily on Pool’s reasoning, despite his warning that analysis of the effects of disease on particular communities during this period must depend on concrete historical and archaeological evidence.239 Yet as we have seen, at least one very widespread epidemic occurred amongst the very small and scattered populations of Kai Tahu.

It is unlikely that the measles epidemic alone carried off the bulk of the population. The most ferocious epidemic in a virgin population for which data is available occurred in Fiji.

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236 Erik Olssen, *A History of Otago* (Dunedin: John McIndoe, 1984), 28. Olssen argued: ‘The Maori population in Otago was about 500 in 1844, and had never been much larger.’
in 1875; it occasioned 25 percent mortality. Yet, combined with the epidemics and chronic illnesses that spread in its wake, it is plausible that the total Kai Tahu population in the South Island was halved in but a few years. Otakou was the settlement most exposed to shipping, so it ought to have suffered still worse than other, more isolated settlements. Peter Entwisle, who has provided the most substantive recent analysis, concludes that it is ‘quite likely’ as many as 1200 Maori lived along the Peninsula’s eastern seaboard prior to the impact of epidemic disease in the mid1830s. Certainly, afterwards there were at most a few hundred.

The economic and social impact of disease is also controversial. Harry Evison, for example, having estimated that the epidemics of the 1830s killed half of Kai Tahu, concludes they caused ‘a sudden decline in the production of flax, potatoes, and other labour-intensive items’. Evison provides no data, bar noting as do Morton and Bathgate, that loss of manpower would have hastened the shift to European sealing and whaling boats that needed far smaller crews.

Atholl Anderson also argued that epidemic disease caused considerable overall population decline. He postulates an increase in death rates of ‘perhaps 0.5 percent per year’, and a reduction in the total Ngai Tahu population from a peak of 5000 to about 2000. But he doubts it can have been as devastating at Otago as the Guillou opinion states, precisely because he claims production at Otago ‘reached its peak during the period when measles and influenza were most virulent’. Anderson provides little

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240 It is telling that Pool explained the exceptionally high 25 percent mortality in Fiji in 1875 via unusual historical circumstances: it was due to measles spreading after the king’s son returned bearing the disease to a welcoming assembly of chiefs, who then spread it to all their districts. This, concluded Pool, occurred ‘for reasons which would not have applied to New Zealand’. Pool, Te Iwi Maori: A New Zealand Population Past, Present & Projected, 123.

For mortality in the Fiji epidemic, see Cliff, Haggett, and Smallman-Raynor, Measles: An Historical Geography of a Major Human Viral Disease 36.

241 Evison, Te Wai Pounamu, 86; Dacker, "He Raraka a Ka Awa," 27 fn.15; Anderson, The Welcome of Strangers, 197-98.

242 Entwisle, Behold the Moon: European Occupation of the Dunedin District 1770-1848, 122 (Rev).

243 Evison, Te Wai Pounamu, 86.


245 Anderson, Welcome of Strangers, 192-94.
evidence for this claim bar citing the shipping of between 25 and 60 tons of potatoes at ‘regular intervals through the 1830s and early 1840s’.246

The two leading scholars Evison and Anderson thus cite contrasting trends in economic production to support rather different conclusions. Neither make more than passing reference to the available data however to substantiate what the trends in economic production actually were, as I do in Table 1: Wellers’ Exports from Otago 1833 to 1840 (below). The data in Table 1 indicate several important trends. The first is the reduction in the range of goods the Wellers carried. Initial cargoes comprised a wide variety of goods as the Wellers explored their market. For example, the Wellers attempted to sell both dried and salted fish (almost certainly barracouta) in both Sydney and the Isle of France, but could not find a satisfactory market.247 Timber tempted Edward Weller in particular, and he attempted to develop several products, including casks (which George praised, resulting in the shipment of 600 staves and 60 spars in 1837 as shown in Table 1 below), and kowhai logs (which George did not encourage).248

Edward now considered building a vessel ‘of about 120 ton’ but could not find timber to suit on the Peninsula. George pointed out that such a ship could not be licensed and would attract foreign duty when entering Australian ports.249 But Edward refused to entirely forsake his project, and eventually had a schooner, the Anne, built of local timber (probably taken from Sawyers Bay).250

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248 Letters from George Weller to Edward at Otago, Sydney, 29 February 1836 and 29 August 1837, cited in Ibid., 230-32, 276-77.
### The Wellers' Exports from Otago 1833-1840

<table>
<thead>
<tr>
<th>Date of Arrival in Sydney</th>
<th>Ship</th>
<th>Oil</th>
<th>‘Bone’</th>
<th>Potatoes</th>
<th>Flax</th>
<th>Fish</th>
<th>Sealskins</th>
<th>‘Flags’</th>
<th>Timber</th>
<th>Misc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Nov. 1833</td>
<td><em>Lucy Ann</em></td>
<td>130 tuns</td>
<td>7 tons</td>
<td>4 or 8 tons #1</td>
<td>1 ton</td>
<td>1 cask</td>
<td>handspikes</td>
<td></td>
<td>86</td>
<td>510 logs 890 rickers 165 h.spikes</td>
</tr>
<tr>
<td>26 April 1834</td>
<td><em>Lucy Ann</em></td>
<td>13 casks</td>
<td>6 cwt</td>
<td>2 tons</td>
<td>3 tons</td>
<td>23 barrels (salt)</td>
<td>3 fur seal skins</td>
<td></td>
<td>86</td>
<td>510 logs 890 rickers 165 h.spikes</td>
</tr>
<tr>
<td>16 August 1834</td>
<td><em>Lucy Ann</em></td>
<td>100 or 120 tuns</td>
<td>4.5 tons</td>
<td>3 or 3.5 tons #2</td>
<td></td>
<td></td>
<td>coal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 August 1834</td>
<td><em>Joseph Weller #3</em></td>
<td>13 casks</td>
<td>499 lbs</td>
<td>30 tons</td>
<td>33 bales</td>
<td>3 fur seal skins</td>
<td>7 ironwood timbers 25 h.spikes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 March 1835</td>
<td><em>Joseph Weller</em></td>
<td>1.5 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31 casks salt; 4000 dried fish</td>
<td>65 fur seal skins</td>
<td></td>
<td>1 cask sundries</td>
</tr>
<tr>
<td>25 July 1835</td>
<td><em>Joseph Weller</em></td>
<td>12 tuns</td>
<td>4 tons</td>
<td></td>
<td>10 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>27 September 1835</td>
<td><em>Susanna</em></td>
<td>163 tuns</td>
<td></td>
<td>300</td>
<td>4000 baskets? #4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 October 1835</td>
<td><em>Lucy Ann</em></td>
<td>90 tuns</td>
<td>‘a few tons’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 December 1835</td>
<td><em>Joseph Weller</em></td>
<td>8 casks</td>
<td>13 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400 bags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 January 1836</td>
<td><em>Persian</em></td>
<td>130 tuns</td>
<td>Whalebone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of Arrival in Sydney</td>
<td>Ship</td>
<td>Oil</td>
<td>‘Whalebone’</td>
<td>Potatoes</td>
<td>Flax</td>
<td>Fish</td>
<td>Sealskins</td>
<td>‘Flags’</td>
<td>Timber</td>
<td>Misc.</td>
</tr>
<tr>
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<tr>
<td>26 May 1836</td>
<td><em>Mediterranean Packet #5</em></td>
<td>3 cwt</td>
<td>51 baskets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 November 1836</td>
<td><em>Harriet</em></td>
<td>195 tuns</td>
<td>7 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 August 1837</td>
<td><em>Henry Freeling #7</em></td>
<td>29 tuns 217 gallons</td>
<td>4 tons 12 cwt</td>
<td>2,262 baskets (12 ton)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 November 1837</td>
<td><em>Isabella</em></td>
<td>170 tuns</td>
<td>12 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14 pigs</td>
</tr>
<tr>
<td>12 December 1837</td>
<td><em>Henry Freeling</em></td>
<td>30 tuns</td>
<td>2 tons</td>
<td>600 baskets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600 staves 60 spars</td>
</tr>
<tr>
<td>25 December 1837</td>
<td><em>City of Edinburgh #8</em></td>
<td>521 casks</td>
<td>whalebone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 August 1838</td>
<td><em>Dublin Packet</em></td>
<td>120 tuns #9</td>
<td>10 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 November 1838</td>
<td><em>Dublin Packet</em></td>
<td>77 tuns</td>
<td>4 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1 February 1839</td>
<td><em>Dublin Packet</em></td>
<td>34 tuns 198 gallons #10</td>
<td>11 cwt, 2 qrts</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>5 Nov. 1839</td>
<td><em>Honduras</em></td>
<td>147 tuns</td>
<td>188 cwt bone</td>
<td>20 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 February 1840</td>
<td><em>Lucy Ann</em></td>
<td>10 tun #11</td>
<td>20 tons #11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
#1 Reports of arrivals and imports in the Australian papers sometimes differ by substantial amounts, as they do here. The *Australian*, Monday, November 11, 1834, col.1 reported 8 tons, as did the ARRIVALS section of the *Sydney Herald*, Monday, November 11, 1834, col. 1. However, the IMPORTS section of the same edition of the *Sydney Herald* p.2, col. 5 gave the quantity as 4 tons. I have indicated wherever this problem occurs in this table.

#2 Again reports in the Australian papers differ. The *Sydney Herald*, Monday, August 18, 1834, 2, col. 3 reported ‘about three tons of potatoes’. The *Sydney Herald*, Monday, August 25, 3, col.2 IMPORTS specified 3 tons. However, an advertisement of 16 September said ‘ten tons of potatoes in excellent condition’. See Ian Church, *Otago’s Infant Years*, 27.

#3 The Joseph Weller quite probably picked much of her cargo at Otago, but since she also anchored in Cloudy Bay and Port Nicholson (Wellington) it is likely some of the items were taken aboard then. This is a second recurring problem in trying to detail exports from Otago over this period. I have indicated whenever this problem occurs in this table. Some ships whose cargo may have contained exports from Otago, but where the bulk clearly came from other ports have been omitted entirely, such as the *Children* which arrived in Sydney on 29/30 June 1835 with wool (from Mana Island), 60 tons flax, 5 tons potatoes, 2 bundles tortoise shell, 1 bundle NZ mats, I canoe, and 3 Maori. See Ian Church, *Otago’s Infant Years*, 29.

#4 The Captain of this ship claimed to Edward Weller that he had bought 300 baskets of potatoes ‘for the consumption of the crew’, though Edward believed he had bought 1000 baskets to sell for himself. See Weller Letters, Hocken Ms-0440/05. 57. The size of a basket is very difficult to ascertain, and seems to have varied considerably. Shortland estimated a basket of potatoes at 35lb. See Southern Districts p21. Boulbee also stated 100 baskets of potatoes brought back from Otago weighed 35 pounds each. See Begg and Begg, *The World of John Boulbee*, 81. The 2262 baskets that arrived in Sydney 20 August 1837 weighed 12 ton, giving an average weight of only 11.88 lbs per basket. Harwood’s journal entry for 13 October 1839 however recorded that he gave a Mr. Cureton 13 baskets that weighed 2130 lbs, at an average weight therefore of 164 lbs.

#5 The *Mediterranean Packet* visited both Cloudy Bay and the Bay of Islands after calling at Otago. Much of the cargo was probably not from Otago; items clearly not from there have not been included. Notably, she had sperm oil aboard, and flax that was purchased for another merchant firm. See Ian Church, *Otago’s Infant Years*, 32.

#6 The Nimrod arrived at Otago carrying 900 barrels of oil, and left with 195 tons.

#7 The Henry Freeling visited Akaroa and Port Cooper after loading at Otago, and may have added to her cargo at these ports. See Ian Church, *Otago’s Infant Years*, 35.

#8 This, at least, is the cargo the ship took to England after returning to Sydney from Otago. See Ian Church, *Otago’s Infant Years*, 38.9.

#9 However, George Weller wrote to Edward on 21 September 1838 to say the cargo was only 88 tons 199 gallons. Church, ed., *Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839*, 264.

#10 Once again George wrote to his brother, on 17 February 1839, complaining that less oil had arrived than was shipped, though the difference was only 50 gallons. Church, *Gaining a Foothold*, 283.

#11 Edward wrote on 15 January that the *Lucy Ann* had 71 tons, but detailed that most was from another of their stations at Taiieri Island, and from the wreck of their ship, the Dublin Packet. Church, *Gaining a Foothold*, 323.

#12 The Wellers chartered this ship to land colonists at a planned agricultural settlement in Canterbury. She visited several establishments on the eastern coast, so probably only a portion of the 20 tons of potatoes landed in Sydney came from Otago. See Church, *Otago’s Infant Years*, 52-53.
The Wellers now focused almost entirely on exporting the most profitable goods: whaling products and potatoes. Accordingly potato production increased rapidly during the early 1830s as Maori realized the size of the market the Wellers had opened to them. Exports suddenly spiked in 1834 soon after it was reported that ‘[t]he Potato crops at New Zealand have been unusually fine, and cultivation is going on to a great extent.’ Over 1834 the Wellers shipped 33.5 tons of potatoes as well as 3 tons and 33 bales of flax (though as one cargo comprised 30 tons and also called at Port Nicholson, the proportion stemming from Otago is unclear). George Weller stressed the demand for potatoes and flax throughout several letters in the autumn and winter of 1835 as the Sydney harvest had failed. A ton arriving about the start of May fetched £13, and on 25 July ten tons Edward had sent at the end of June arrived, that sold immediately at £8 per ton. As Anderson has noted, George wrote to Edward on 7 August and repeated a request for 50 or 60 tons of potatoes to arrive around the end of October.

However, as Anderson does not note, the request was not actually met. In fact measles had by now arrived at Otago. So, on 2 September Edward wrote to his brother explaining that he was far from sending such a large quantity: ‘Potatoes are not to be procured’ he said, explaining someone had bought over 1000 baskets before him. On 6 September he sent his older brother Joseph’s corpse home in a barrel of rum. On 12 September he sent a terse note admitting that he could not send any bone either, and now acknowledged that this was because of ‘the natives being ill and unable to clean it’. In December he sent a paltry 400 bags of potatoes, with the excuse that the want of a ship had caused what he had to spoil,

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251 The Sydney Herald 11 November 1833, 2 col.4, reported that ‘A chief of one of the tribes who has come up in the Lucy Ann states that his countrymen want to live in peace, and be protected’ Given the ship sailed direct from Otago, given that Taiaroa and others were surely preparing for the taua nui at this time, and given this statement it is likely, but not certain, that this was Karetai. Six ‘New Zealanders’ sailed back on the Lucy Ann at the end of the year. Sydney Morning Herald, 2 January 1834, 2 col.1. Cited in Church, Otago’s Infant Years, 131-32.
252 Ibid., 26-8.
254 Church, Otago’s Infant Years, 29.
256 The Sydney Monitor 3 October 1835, p2 col. 1 said the ‘disorder’ had not existed at Otago for some months before the Susannah’s arrival there. The Susannah was sent from Sydney on 26 July, and so probably arrived about the 10 August. See Church, ed., Gaining a Foothold, 217.
though admitting 'the loss is not great'. 259 Maori were, however, perfectly accustomed to storing their potatoes through the winter, so this explanation is not entirely convincing. In response to further requests from George, who eagerly anticipated windfall profits after the failure of Sydney harvests, Edward promised a cargo next year, assuring his brother of a plentiful harvest. But as the table reveals, potato exports during the remainder of 1835 and throughout 1836 were very low – almost nonexistent in fact. In 1837 they recovered somewhat, and 12 tons arrived in Sydney on 22 August, with another 600 bags on 12 December. 260

After 1836 the sale of potatoes to bay whalers obscures the precise scale of subsequent production, but the scale of this trade was not large – the Genii for example anchored in Otago for six months, much longer than most, and she took on board only 490 baskets of potatoes. 261 The inescapable conclusion is therefore that a very substantial decline in potato production occurred at the time of the epidemics, a decline all the more marked given the increases in exports in preceding years. It is also notable that there was very little flax (the most labour intensive product) exported over this time.

6.4 Birth pangs of a new society: social and cultural change amongst Maori

The series of calamities just described undercut the social and economic structures of the communities on the Peninsula. In the aftermath of a similar epidemic which struck the Banks Peninsula communities in 1848 James Hay described the change he felt in the Maori: once ‘often boastful and threatening’, ‘their ranks were left thin and the survivors cowed and only too willing to become law-abiding subjects. 262 Worse, as we have seen, whaling from the Harbour went into a sharp and irreversible decline from 1839, and the market for Maori

261 J.S. Polack, New Zealand: Being a Narrative of Travels and Adventures during a residence in that country between the years 1831 and 1837, vol.1 (London: Richard Bentley), 251. Polack records that in the north whaling ships bought an average of five tons of potatoes each. If the trade was equivalent in the south, this might well explain why exports dwindled. However, this reflects a difference between deep-sea whalers who had to provision for long voyages, and bay whalers who stayed close to shore. Thus this is not the scale suggested by the data for Otago.
262 Hay, Reminiscences of Earliest Canterbury (Principally Banks Peninsula) and Its Settlers, 10, 49.
labour and (to a lesser extent) produce, disintegrated. As a result, the fabric of society at Otakou became fragile.

Though some reminiscences such as Haberfield’s held that Maori at Otakou did not drink, Harwood’s journal for the years 1838 to 1842 leaves no doubt that his Maori employees did so daily, though not then approaching the astounding quantities of spirits consumed by the European whalers.263 Many accounts of the time stress the parlous state of the people, and most subsequent historians have accepted these verdicts.264 Some bemoaned in particular the levels of male drunkenness and the apparently coerced prostitution of women.265 The French explorer D’Urville and his officers (who arrived, it ought to be stressed, at the very worst time, at the end of the season debauch, and when Harwood was away) provide the most jaundiced view. They were repulsed by the filth and squalor of the Maori and their housing, and disgusted by drunkenness and prostitution, the women ‘riddled, it is said, with venereal disease’.266 The French also saw unmistakable signs of population loss; the officer Dubouzet noted ‘I was astonished to come across several empty huts. I learnt that these dwellings had been abandoned because their owners had died.’267

Yet theirs was a brief and superficial view; a simple change of setting could completely transform the Frenchmen’s perceptions, as the officer Roquemaural revealed: ‘[o]n our arrival we found these filthy, ragged creatures, whom we had left crouching round a fire, transformed into maidens with their hair blowing in the breeze, laughing gaily as they helped

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263 Harwood, "Copy of Octavius Harwood Journals." Harwood’s journal describes drawing off vast quantities of rum for the whaling gangs – regularly dispensing amounts such as 30 gallons for a few weeks consumption.
265 Watkin’s journal is a litany of such complaint. For example, “One of the curses of this people is their giving their daughters and sisters to Foreigners for a consideration (small enough)! And many of them of a tender age often before any sign of puberty has appeared, it makes me sick at heart to contemplate such things, the consequences of which may be imagined. My hopes of the preservation of these tribes are faint indeed. Disease prevails, deaths are much more common than births, and the inequality of the sexes is rendered greater by the females being given to Foreigners, many of whom die, there is one who considers himself respectable has lately buried his third concubine.” Watkin, "Transcript of Journal of Rev. James Watkin ", 23 July, 1842.
266 Olive Wright, The Voyage of the Astrolabe (Wellington: A. H. & A. W. Reed, 1955), 34. Watkin also inveighed against drunkenness, though more in relation to the Europeans. However, his pious hand-wringing should be weighed against the fact that he had himself been removed from his previous post for inappropriate liaisons, and was actually not averse to a drop. One of his purchases from Harwood, on 10 February 1842, comprised four gallons of brandy, a cask of ale and a cask of porter (£6 8s), a box of cigars and lb tobacco (£2 17s) – and a shawl for his wife (5s). Harwood, "Accounts Ledger of Store Customers and Any Debts Incurred."
267 Wright, The Voyage of the Astrolabe, 23.
our sailors wash their clothes. The French officers’ accounts were also highly critical of the remnant European population. But they simply ought not be regarded as authoritative. Le Breton’s watercolour paintings of Otago better capture something of the new society that had emerged at Otakou. Of note in Figure 10 (below), for example, which seems to be a view looking up the harbour from Te Ruatitiko at the northern end of Te Rauone Beach, are the mingling of old and new elements: Maori houses and whata amid a decidedly sandy foreshore, and a number of European with boats and ships afloat. Other images produced by Le Breton during this visit highlight even more markedly the proximity of Maori and European housing, and show canoes pulled up on shore, while felled trees frame the scene.

**Figure 10: Louis Le Breton, 'Port Otago' 1840**

In particular, focusing on the French accounts, or the experience of bay whalers, provides a very skewed view of the sorts of relationships Maori women had with European whalers. As Atholl Anderson has stressed, there was a continuum of relationships between prostitution,

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268 Ibid., 65.
269 Louis Le Breton, ‘Port Otago 1840’, 343 x 479 mm, water colour with charcoal, DC CL452, Neg. #616, Hocken Collections.
exchange relationships to Christian marriages. Bay whalers and the French explorers were transient, and so therefore was the sexual hospitality afforded them by unattached young women (something perfectly acceptable in traditional Maori society). Relations with shore whalers, who stayed through the six months of the whaling season or longer, were quite different affairs. As the early twentieth century amateur historian G. C. Thomson put it, ‘the Maoris very jealously guarded the honour of their women. Each whaler had a Maori wife according to their custom’. This was a crucial arena of negotiation in which the middle ground was (literally) born. Thomson notes that ‘[r]egular bargains were struck between the experienced headsman and the relations of the girl selected and in most cases bargains were punctually adhered to’. Whalers expected these women to cook, wash and mend clothes, and generally keep a clean house. Her relations expected payment in the form of various goods throughout, as well as at the end of the season, reflecting the fact that this was part of the obligation entailed by being accepted as part of the community.

After the end of shore whaling, when those Europeans who remained were effectively permanent settlers, all their relationships with Maori were reorganised. There were still several Maori villages strung along the shore near the tip of the Peninsula, each under its leading chief. In 1837 these were Karetai at Pukekura, Potiki at Te Ruatitiko, Hoani Wetere Korako at Tahakopa, Tāiaroa at Omate, and Wi Te Raki at Waipapake. The Europeans had to negotiate with these and other Maori leaders for leases for the land they needed to occupy if they were to remain. Harwood, for example, paid £5 a year over 1846 to 1847 for the right to graze his stock on the Maori lands. In accordance with the traditional way Maori allowed others access to property, relationships with Maori women were increasingly formalised.

Harwood, for example, partnered Titapu, daughter of the chief Pokene and Hinetaumai. ‘King Bogany,’ as Harwood referred to him in land transactions, was an important Canterbury rangatira who resettled at Otago in the wake of Te Rauparaha’s incursions. Theirs was evidently a close relationship, but in the winter of 1842 Titapu, like many of the Maori

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272 Ibid.
273 See G.C. Thomson Papers, Hocken Collections, MS-0439/13/7, 2-103/7, typescript.
274 Dacker, "He Raraka a Ka Awa," 128-29.
developed consumption (‘several natives died’ on 1 May alone, while the whale boats could not go out throughout much of May for want of hands). She was attended by both Harwood and a French whaling doctor, but by 19 May Harwood was ‘very much troubled’ since Tetuk was ‘almost dying’. Pokene warned Harwood on 12 June that ‘he would be revenged if his daughter died’, but there is no evidence that he did in fact exact utu from Harwood or anyone else after she died two days later, another sign that culture was being renegotiated in the merger with Europeans.276

Harwood’s partnership with Titapu was but one example of a consistent wider pattern. In 1843 Watkin noted that Maori women generally had begun to force their partners to choose between marriage, and separation.277 This was not the behaviour of subordinates. The relationships that remained were most often true partnerships, with genuine affection. J. W. Barnicoat, a surveyor accompanying Tuckett as he searched for a suitable site for the Scottish settlement in 1844, recounted this affectionate scolding a European man in Bluff was given after he disparaged Maori women:

By and by you go to Otago – to Waikawa – to Toutoe. You stay there three weeks – you stay five weeks – you stay two moons – you come back – you say – Hello! Where’s the cow? Gone! – Where the bull? Gone! –Where the goats? Gone! –Where the chickens? Gone! The blankets gone the stock gone – all, all gone. – you get the Maori woman. By and by you go to Otago – to Waikawa – to Toutoe. You stay there three weeks – you stay five weeks – you stay two moons – you come back – you say – Hello! Where’s the cow? Me say – All right! You say – Where the bull? Me say – All right! You say – Where the goats? Me say – All right! You say – Where the chickens? Me say, All right! The blankets are all right, the stock all right – All, All right – Ah very good the Maori woman.278

As Barnicoat remarked, she showed ‘the characteristic talkativeness, liveliness [sic] and shrewdness of her sex and people’.279 It also nicely illustrates the sense of partnership evolving through such relationships, since the Maori woman here was clearly doing more than stopping stock straying – she was guarding their possessions from theft.

Some relationships can only be treated as love affairs. The best example of this is the choice of Patahi to marry Edwin Palmer, after waiting years for him to return, and despite the intent

278 J.W. Barnicoat, "Diary, 17th June 1843 – 11th October 1844," (Hocken Library, 1844), 8 May 1844, 24-25.
279 Ibid., 8 May 1844, 24.
of Tuhawaiki (not to mention 'all the other Maoris) that she marry him, then pre-eminent chief of all Murihiku Maori. Patahi fled Otakou to avoid Tuhawaiki's anger, and only returned once Palmer had rejoined her as he had promised. The couple were then accepted within the community and lived at Otakou for some years, having two girls together. Such children were raised into a life that gradually mingled elements of each society, eventually creating a hybrid culture.

However, it is important not to ignore the fact that these developments gradually split Maori communities along gender lines. Maori men maintained patterns of traditional authority in the villages, but many of the marriageable women now lived with Europeans elsewhere. By 1844 Tuckett estimated two thirds of the younger women were living with Europeans and, not one to mince words, reported the universal view was that southern Maori were now 'perishing like rotten sheep'. Anderson has argued that the most significant cause of Maori population decline by 1840 was loss of women to Europeans. However, this ignores the fact that the children of these unions, though they were not seamlessly integrated into either European or Maori society, were very often members of Maori communities.

The rapid progress of James Watkin, the unhappy Wesleyen missionary at Waikouaiti, is a clear indication Otago Maori were struggling to develop a conceptual framework that placed them in this newly strange world. Karetai had asked Sydney colonial authorities for a missionary in 1834; in 1839 he and Taiaroa together requested a missionary of their own, to teach them to read and write. They knew literacy was crucial to engaging with Europeans, and literacy could only be gained through engaging with missionaries. Watkin had arrived at Waikouaiti in May 1840, and by November held two writing classes each day, attended by 'all grades, old, young, leaders, people'; these often included people from Otakou. The

280 Ibid., 25 September 1843. See Angela Wanhatta, "Transgressing Boundaries: A History of the Mixed Descent Families of Maitapapa, Taieri, 1830-1940" (PhD, University of Otago, 2004), 64.
285 Dacker, Te Maemae Me Te Aroha, 15.
286 Watkin, cited in Ibid., 16.
willingness of Maori to discard protocols of rank is testament to the avid desire for literacy. By 1844, the surveyor Barnicoat encountered Maori in the Harbour who desired ‘steel pens, ink and paper’ in return for their fish and potatoes, had ‘copybooks of very neat writing of which they seemed proud’, and who wrote inscriptions on the grave-markers of the recently deceased.\textsuperscript{287}

Watkin’s success in converting Maori to Christianity had other powerful sources. On 5 June 1840 Watkin noted that ‘all sickness is ascribed to supernatural or perhaps infernal agency. Taipo being the supposed author of the disease whatever it may be. Taipo is a foreign word, its native place and etymology I cannot trace, but as it appears to mean the Devil and is of universal use I shall not disturb it.’\textsuperscript{288} But Watkin used the prevalence of disease to try and disturb the deepest structures of Maori belief.

Watkin preached that Maori were dying because their belief in their atua, and the tapu that stemmed from them, was sinful. As we have seen, the tohunga seemed powerless before ‘he taru tawhiti’, the diseases from afar. Watkin observed that it was at times of sickness that tohunga usually exercised their calling to try and exorcise the harmful spirits – and now failed. He, however, began to dispense European medicines very soon after arriving. The intense desire for literacy, entwined with the effects of disease, was a potent cause of conversion to Christianity. Maori naturally hoped learning to wield the language of European spirituality would give them the power to withstand European illness and disease. Thus Watkin reported a Maori belief that the Bible would restore life if placed on a dead person’s chest; Watkin examined one such book, and found it was a copy of Norie’s \textit{Epitome}.\textsuperscript{289} The argument Watkin’s books and Bibles were most potent as medicine gains credence from the fact that the Wellers’ whaling station had always had its own doctors, as did visiting whaling ships, while Harwood also acted as a makeshift physician to whom many Maori had recourse.\textsuperscript{290}

\textsuperscript{288} Watkin, "Transcript of Journal of Rev. James Watkin ", 5 June 1840.
\textsuperscript{290} Watkin, "Transcript of Journal of Rev. James Watkin ". The first was Dr. Strang; Dr Crocombe succeeded him in 1838, but left after quarrelling with Edward Weller. Harwood recorded treating Maori on several occasions, and his diary makes it quite clear that sudden sicknesses remained a significant cause of mortality. In the late summer of 1839 there was a fairly widespread illness, so that on 29 March for example, Harwood ‘Gave physic to 6 natives’, while on 1 April he ‘Issued physic to Price’s Mowrays. Two boats out, rest in on account hands being sick’. As noted in the text another bout of illness, probably consumption or influenza, struck in May-June 1842. The Wellers’ medicine chest, held at the Otago Peninsula Museum (OP 90 121) suggests the
In 1843 the younger Maori leaders of the Peninsula villages offered themselves for baptism virtually *en masse* and accepted the tapu of the new Christian atua. Watkin had baptized 258 Kai Tahu by the next year, and had twenty-six native teachers moving amongst the people to spread the new faith. This did not mean that the old Gods were overthrown; it was not until 1865, for example, that the tapu of the shrine to Kahukura on the western harbour was removed, by Piripi Te Kohe, a northern Maori evangelist in the mould of Te Whiti. Te Kohe convinced the Otakou leaders that their sicknesses were not the result of an inability to abide within the bounds laid down by the Christian atua, but were caused by their old gods, who had turned upon them, and whose power had to be ritually broken.

Continued respect for their atua did not prevent all Maori embracing the new God with considerable fervour. Most Otago Maori were henceforth, in their own way, much better Christians than their European neighbours. Leaders, for example, gave up their slaves, made peace with their former enemies Ngati Toa, forsook multiple wives, and steadfastly refused to likely remedies Harwood would have had recourse to. It contained ‘Sal Volatile, Ipecacuanha, Harts horn, Rhubarb, Emetic Tartar, Essential Oil of Cinnamon, Citric Acid powder, Tincture of Henbane, Panegoric, Peppermint, Sulphate of Quinine, Friar’s Balsam, Extract of Belladonnae, Balm of Gilead, and Splints, Trusses, Gum Bougies’ etc’. These medicines are mostly emetics and purgatives, reflecting the current belief that illness had to be evicted from the body. This was believed by both Europeans and Maori, the difference being Maori used karakia to try and drive illness out, whereas Europeans used purgatives.

It became another arena for competition for mana here, with all Maori at Te Ruatitiko, Pukekura and Ow henua being Wesleyans, while all Maori at Tahakopa were Episcopalians. See Mantell’s census 1852. Recent historiography has emphasised this as a reason for Maori conversion, but taken alone, this does not satisfactorily explain a step that had such profound social and economic consequences as the withdrawal of *tapu* from the natural world, the abandonment of slaves or scrupulous observance of the Sabbath. As Lyndsay Head points out, the current mainstream trend to regarding Maori conversion to Christianity as always ‘something else – the pursuit of *mana*, money or literacy’ ignores and abrogates the real depth and dignity of Maori Christian belief. See Lyndsay Head, “Wiremu Tamihana and the *Mana* of Christianity,” in *Christianity, Modernity and Culture*, ed. John Stenhouse (Adelaide: ATF Press, 2005), 59-60. I maintain disease was a key motive for Kai Tahu conversion (or better, adoption and adaptation) to Christianity. Belich’s analysis isolates the critical point: though European methods of treating disease were scarcely any more effective than Maori methods, Maori could see that Europeans did not die from diseases which killed them, even when both received the same treatment (missionaries began treating Maori long before they converted them). Europeans however had the protection of a different God. Belich, *Making Peoples*, 177.
perform any work on the Lord's Day. Christianity also slowly undermined even such fundamental tenets such as whakapapa and utu (for example accidental deaths were no longer rectified by ritual killing), and hence gnawed at the traditional underpinnings of chiefly authority. In making such profound changes, Maori sought to placate the will of a mysterious European God, whose whims were so powerfully expressed through the invisible agency of disease.

The Kai Tahu scholar Te Maire Tau argues that the iwi abandoned the embedded system of explanation of the world via whakapapa because like disease ‘potatoes, sheep, muskets and bullets all needed to be explained. Though the relationships between people were obviously still explicable through whakapapa, Tau argues that whakapapa could no longer function as an all-encompassing explanation. He suggests that the principle that held knowledge together ‘collapsed under its own inflexibility.’ The conceptual structures of whakapapa could no longer explain to Maori the forces shaping their rapidly changing environment. For the environment too was becoming a middle ground, as the indigenous biota and introduced species jostled for space in new ecological niches carved out by human action.

6.5 Environmental Change 1831-1848

The introduction of viral and bacterial pathogens was the ecological shift with the most economic and cultural impact on Maori. It involved the most intimate environmental changes: the incorporation of, and adaptation to, invasive organisms by Maori bodies. Whaling also initiated several other key processes of ecological change that, as they have been more widely applied, also radically transformed Maori society, and New Zealand environments. Most obviously, the whalers virtually eradicated southern whales from these waters; very few continued nursing calves on these coasts. There was considerable environmental change around the whaling station: whaling was an intensive and very dirty industry. It required substantial localised land clearance for cultivation, the picking out of many of the finest timber trees, and felling for firewood; it encouraged sand movement, and polluted adjacent waterways. Whalers brought many new plants, including crops, garden

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294 Dacker, *Te Maemae Me Te Aroha*, 16.
plants, and fruit trees, as well as animals – poultry, sheep, goats, cattle, pigs, dogs, cats and, inadvertently but inevitably, more Norway rats. A few of these animals, notably rats and pigs as we have seen, but also presumably cats, began the process of spreading over the landscape far beyond their point of entry at Otakou. In such ways the presence of whalers initiated key processes of large scale and irreversible ecological change.

Spreading land clearance was driven by demand for firewood and new ground for cultivation, needed to fuel the try pots and feed the people of the shore stations and the bay whaling ships. As early as 1838 Harwood supplied the bay whalers with firewood cut from ‘up the River’ – clearly there was little left in the vicinity of the station. The considerable localized land clearances observed from 1840 were due both to the need for fuel, and for clear ground for raising crops, primarily potatoes. Jacquinot, a French officer with D’Urville in 1840, noted that ‘the land here has not been properly cleared so far; often the trees have been felled with the axe, but remains of them have been left lying about on the earth. The natives are prepared to scratch the earth a little around the fallen trunks of these enormous trees in order to plant’.

The Wellers’ letters and Harwood’s accounts make it clear that Maori grew the vast bulk of the potatoes. The French described Maori cultivating ‘the narrow valleys and sometimes also the slopes of the hills... divided into fields full of potatoes’. The harvested potatoes were initially stored on whata, to protect them from rats that D’Urville recorded were ‘nowhere more numerous than in New Zealand’, and then over wintered in clamps to guard against frost. Obviously many more rats had arrived during the whaling period, slipping ashore of their own accord, or fleeing ships smoked to kill them.

297 Though blubber from which the oil had been extracted was also used as fuel, the demand for wood was still high, as evidenced by the ‘rafts’ of firewood taken on board by bay whalers like the Genii, under Captain Cattlin, which stayed in Otago Harbour from June to October 1836, taking 11 whales, and trading three muskets, some lead, an adze and two buckets with Maori for 490 baskets of potatoes, as well as shipping fire wood and fresh water. For the Captain’s log while at Otago, see Church, ed., Gaining a Foothold, 238-243, 247-252.

298 Wright, The Voyage of the Astrolabe, 25.

299 Ibid.

300 Ibid., 18. De Blosseville recorded that Maori stored their potatoes as the Irish did – that is, in pits. Robert McNab, Murihiku and the Southern Islands (Invercargill: William Smith, 1907), 215.

301 The captain’s log of the Friendship, an American whaling ship which took whales and resupplied at Otago between 20 April and 14 June 1838 mentions performing this practise on 4 June. Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839, 312.
The Europeans grew a variety of other plants for food, and raised animals besides pigs. Their activities were small-scale, but reasonably diverse, especially after whaling fell away. In the bush the French saw ‘cultivated fields’, ‘planted with potatoes, lettuces and turnips’. According to the French, these ‘almost all belonged to Europeans’. The whalers all grew vegetables for their own table in cottage gardens. After arriving in 1838 as the Wellers’ station-manager Octavius Harwood played a key role in establishing and diversifying gardening and farming practices. His journal mentions planting his vegetable garden with cabbages, broccoli, peas, beans, cress, and parsley. He planted an orchard, and unlike other Europeans, indulged in ‘a flowery garden’, so that his property was later described as including ‘fruit trees and bushes in plenty’. He also played an important role in distributing seed for plants such as beans, peas, garden flowers and strawberries to other settlements.

Because bay whalers continued to visit in numbers, a trade remained to serve, and Harwood assumed control over the Wellers trading depot. In July 1841 he formed a partnership with Charles Schultze, based in Wellington, who supplied stock to the store, and helped Harwood ship and sell his produce. For Harwood was now embarked on the first real attempt to reproduce British farming on the Otago Peninsula, growing grain and root crops, running a range of stock. This was true mixed farming, meant to provide a range of produce not only for his families subsistence but for market, including meats (pork, beef, mutton, fowl), dairy products, eggs, grains (barley and wheat), fruit, and vegetables.

Edward Shortland calculated that by 1843 there were 12 acres under cultivation at Otakou, where 50 sheep and 12 cattle were being run. Other records suggest this probably underestimated the variety and number of stock. Harwood’s journal mentions rounding up

302 Wright, The Voyage of the Astrolabe, 19.
303 Ibid.
305 Church, Otago’s Infant Years, 62.
307 Shortland, "Outwards Letter Book 'A' 15 September 1842 to 13 March 1845." George Weller mentions in a letter dated 25 July 1835 that he sent 6 sheep and a dozen fowls to the station. See Church, ed., Gaining a Foothold, 212-213. Chickens may have arrived much earlier. The Creed Manuscript mentions that Hoani Tawiri brought live white fowls to Waitoukaiti after an attack on a European sealing gang to the south; this was one of the General Gates’ gangs, and the attack occurred in either 1821 or 1822. This introduction may not have been significant: there may have been no rooster with the chickens, or the Maori may have eaten them all.
herds of cattle from Okia Flat, and also lists poultry, goats, and pigs among his animals. Stock were generally run loose, as large scale fencing designed to keep them in would have been prohibitively expensive and because there was besides insufficient pasture in the vicinity of the Heads; instead stock were fenced out of cultivations. Cattle, pigs, and goats, thus had the freedom of the Peninsula, and began the process of changing forest composition by preferential feeding that, to this day, determines which species can survive in browsed forest remnants. The difficulty in recapturing stock meant that wild herds formed, to the benefit of subsequent settlers in need of meat. One or two other sorts of animals, not so often noticed by observers, had also arrived in some numbers. Johnny Jones is reported to have had many dogs, and 200 cats at his whaling station, and while perhaps not introduced in such numbers, cats would almost certainly have been useful in controlling rats at Otakou, and dogs in 'sport' fighting and pig hunting.

In order to plant his crops Harwood organised the burning of the 'grass' (pikao and tussock) on the hills behind the station. Once burnt, these areas were planted in potatoes, barley, and wheat. Several observers waxed lyrical about the quality of these potatoes, Tuckett exclaiming that 'I have not seen elsewhere in New Zealand such fine potatoes; supposing that I saw only a picked sample, they exceeded all other picked samples.' Monro too praised the 'excellent' potatoes and 'very good' barley. He dismissed the wheat as 'almost universally smutty' however, showing that some crop pests were present from the very beginning of European agriculture.

Harwood's efforts were soon emulated. After 1844 when the New Zealand Company purchased the land (as discussed in detail subsequently), the European and Maori people populating the Peninsula at the Heads lived in expectation of the imminent arrival of settlers.
More people drifted into the area to await them, so that by 1847 some 100 to 150 Europeans lived on the tip of the Peninsula, more than ever before. And, though these years are often brushed over, between 1844 and the settlers' belated arrival in 1848, some important developments occurred here.

The European population at Otakou were becoming true settlers, not seasonal migrants. They included at least a dozen couples, with over 20 children. Sustaining such families changed the nature of the occupation and use of land. Archibald Anderson and Andrew Rowan created another farm to rival Harwood's at 'Kelvin Grove'. The first European settlers ventured to live further up the harbour margins; William Leslie settled in Portobello, John and James Anderson became the eponymous settlers of Andersons Bay. And between 1846 and 1847 Charles Kettle led a team of surveyors, who laid out the proposed town of Dunedin and its vicinity, including the properties and roads of the Peninsula, thereby largely establishing the economic and ecological place of the Peninsula within the future Scottish settlement. This last development will be discussed in the next chapter.

Domesticity required Pakeha families engage in a much wider range of economic activity than had whalers; these families relied on a wider range of local resources, and had different relationships with Maori. Like several others disappointed with their lack of progress at Waikouaiti, David Carey, for example, moved his family to Otakou in 1842 or 1843. There he leased land from Maori in exchange for cloth and 'trinkets'. He grew vegetables, hunted

315 Charles Kettle, "Letter Book of Charles Henry Kettle Chief Surveyor of the Settlement of Otago.," (Dunedin: Hocken Library, n.d.). Letter to Colonel William Wakefield, 25 January 1847. Kettle reveals not only the population, but their typical occupation: 'It is a notorious fact that there are more spirits drunk in Otakou than at any other place in New Zealand where there is an equal population. I have ascertained that during the last six weeks there were 200 gallons consumed at what is called the port, where there are about 100 people living - there are no less than 6 public houses.' Later in the same letter however Kettle states that there are about 150 people at Otakou. For discussion of the fluctuations in population over this period, see Entwisle, Behold the Moon, 109-10.

316 Many of these people arrived having abandoned Johnny Jones' settlement at Waikouaiti. This includes families such as the Carey's, Monson's, and the Coleman's. According to the obituary of Mrs Woolsey, nee Coleman, there were thirty-four families at Otakou by 1848. See 'Obituary,' Otago Daily Times, 21 October 1929.

317 Octavius Jnr Harwood, "Fragments of History of the Otago Peninsula, Larnach's Castle, Etc.," (Dunedin: Hocken Library, n.d). According to Octavius Harwood (Junior) Christie of Sydney settled in 1840 at the bay 'known to the Maoris as Hereweka and to the Sea going men as Lime burners Bay and renamed it Portobello after his birthplace near Edinburgh in Scotland.' He kept drapery and provisions for sale that he received from Octavius Harwood's store. Harwood Jnr. attributed his abandoning his stock on 'account of his wife taken a trip to Stewarts Island for supply of mutton birds for the winter before his departure from New Zealand in 1844 back to Sydney. This was his last words, goodbye groper, good barra-cooter [sic] and God bless the Pigeons.'

318 Hocken, Contributions to the Early History of New Zealand [Settlement of Otago] 62-64, 80; Entwisle, Behold the Moon, 99, fn.585.
pigs, cut timber and fermented liquor from cabbage trees, all of which products not only fed his family, but were traded to visiting ships for the then essential elements of the European diet – tea, flour, salt, and sugar. Together with Charles Roebuck, he built a twenty-ton ketch with Peninsula timber, and thereby traded with other coastal settlements. Meanwhile, Hannah, his wife, learnt from Maori how to weave parapara (flax sandals) while Maori, for their part, learnt how European women cooked the new foods they were encountering.319

'Kelvin Grove', established on land leased from the Maori behind Te Rauone Beach was another very early attempt to institute British mixed farming practices on the Peninsula.320 Kelvin Grove was established as a cooperative arrangement between Archibald Anderson, who owned the stock but remained in Wellington, and Andrew Rowand, the farm manager at Otakou. Rowand built a homestead, outbuildings and stockyards, and attempted to run a farm based upon 500 to 600 sheep for mutton and wool, some seventy cattle, run at first for meat, but later for milk, and butter, several work horses, and cropped potatoes, cabbages, and lettuces. Rowand employed a housekeeper, shepherd and overseer.321 Thus, like Harwood's efforts, Kelvin Grove presaged the farming practices that European settlers attempted to impose upon the Peninsula, more or less successfully, over the next 50 or so years.322

320 The precise location of the Kelvin Grove homestead is uncertain, since it has been buried by sand. However, 'Kelvin Grove' is marked on McLeod’s map of 1867, as seen in the figure below, and the house is described by Murray Thompson as being 'midway between Harrington Point... and the Black Rock' and was 'about 400 yards back from the beach'. See Thompson, A Pakiha’s Recollections, 29.
322 Alfred Eccles, ed., A Pakiha’s Recollections: The Reminiscences of Murray Gladstone Thomson (Wellington: A.H. and A. W. Reed, 1944), 28, Wendy Hinton, "Pre-Settlement Otago from Moeraki to Molyneux" (B.A. Hons Dissertation, University of Otago, 1976), 70. M. Hinton gives the stock numbers sent to the farm in 1844 as 30 cows, two horses, and 500 ewes. According to an advertisement in the Otago News 7 March 1849 when the stock were sold they numbered 77 cattle, the greater part in milk or calving, as well as several horses, and about 600 sheep.
This farm however was never likely to thrive. The detail from McLeod’s map (Figure 11, above) shows that of the little open ground available to stock behind the beach, much was swathed in drifting sand. It also shows the lagoon, Pakehau, which was later lost to the sand. There was, clearly, little vegetation palatable to sheep and, according to Davison (one of the surveyors who succeeded Tuckett), Rowand was almost immediately forced to move the sheep to the head of the harbour in order to find grazing, a process which took him nine days. He was unable to move his cattle however. Rowand relied on supplying meat and dairy products to the community at Otakou, to visiting whaling ships, and to the surveyors

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who arrived in 1846. Kelvin Grove had been handed on to Edward Stokes (formerly tutor to Johnny Jones’ children) when the settlers arrived in 1848, and played an important role then in providing them with supplies of milk, butter and vegetables; but Stokes too soon abandoned the land to join the settlers at Dunedin. This combination of economic and environmental problems, especially the lack of reliable markets, and poor land, haunted the development of the outer Peninsula.

Though only small scale, these first agricultural practices on the Peninsula were important. They demonstrated to Europeans that the grain crops and stock animals their way of life at home was predicated upon could be grown here. When the apprehensive settlers of 1848 first arrived, Captain Cargill pointed to ‘the cultivations of the few squatters (mostly from Ross and Sutherland [i.e. Scots]) who have been waiting to join you’ as examples of how they too would thrive, especially as, armed with secure title, they might displace ‘squatters’ elsewhere – though not, of course, from the Maori land, over which they had no such authority.

The whalers’ farming showed Maori how to raise these unfamiliar crops and animals, and illustrated to Maori something of the interdependent relationships between Europeans and their foods. But Maori were also quick to devise different methods to suit their needs, even in raising unfamiliar plants such as grain crops. James Hay recorded that Kai Tahu on Banks Peninsula sowed their grain seed in the soil turned over as they harvested potatoes day by day as required; the crop therefore ripened unevenly, but it was simply harvested with sickles as it ripened. As Hay noted, ‘Maori always had an eye to saving labour.’

325 Hardwicke Knight Otago Daily Times, 8 November 1975. Rowand was something of a scoundrel; selling stock to American whaling captains is understandable, but he then attempted to abscond with all the proceeds, only to drown when his ship, the Leven, sank off Akaroa. See Alma Rutherford, Archibald Anderson 1810-1917, 6
326 Stokes advertised the stock for sale in the Otago News from the 7 March 1849. Harwood offered to buy the farm for £50, but Stokes declined, believing several parties to be interested. However, I have been unable to uncover whether anyone occupied the land between this time and 1862, when Peter Thomson took up a lease there. See "Miscellaneous Letters," (Dunedin: Hocken Library, n.d.), 12 July 1849.
327 Otago Journal, No. III. November 1848, 38-39. Cargill’s address to the newly arrived settlers stressed their commonality with the established residents: all were Scots, wanting to grow the same crops and raise the same stock. The key difference was that the residents were ‘squatters’ who could be rightfully displaced: ‘In the cultivations of the few squatters (mostly from Ross and Sutherland) who have been waiting to join you, you have seen and partaken of the wheat, barley, oats and garden-stuffs you have been in the habit of raising, together with the sheep and cattle despastured on the hills you are to graze.’
328 Hay, Reminiscences of Earliest Canterbury (Principally Banks Peninsula) and Its Settlers 16-17.
Farming had a variety of significant consequences for the local environment. New land had to be regularly brought into cultivation because potatoes require large amounts of nitrogen (much more than kumara, for example), and Maori abhorrence of manuring land meant the fertility provided by burning and clearing tussock, scrub and forest was rapidly exhausted; new land was therefore brought into cultivation about every second year.\textsuperscript{329} Hay describes Maori burning bush by cutting down all the smaller vegetation at ground level, and piling it together with branches off the bigger trees: ‘they generally got a capital burn, and got splendid crops of potatoes from the soil. If they wanted a second crop they left a few small ones on the ground’.\textsuperscript{330} Clearing coastal forest, scrub, and tussock for fuel and food meant the shore settlements became increasingly precariously situated on dry sand dunes almost completely bereft of vegetation.\textsuperscript{331}

Shortland found when staying at Harwood’s store in 1843 that ‘whenever the wind blew, it drifted with it a fine sand from the neighbouring beach, which penetrated everywhere, and was a source of much annoyance.’\textsuperscript{332} A year later Monro recorded that a great part of the 20 to 30 acres in the vicinity of the whaling station ‘consists of immense sand-banks like drifts of snow, without a blade of vegetation upon them, and shifting with every wind, so that you may see cottages half-buried, and garden fences completely overtopped.’\textsuperscript{333}

Loss of vegetation had transformed the area behind Te Rauone beach into an extremely unstable and active dune system. Over succeeding decades the sand continued to flood over the land, eventually covering as much as 1000 acres.\textsuperscript{334} There were evidently problems with an unstable shore much earlier. In 1837 the sea had washed over one of the stations, and the oil had only been saved by a hasty retreat to higher ground.\textsuperscript{335} Harwood’s journal details rain washing away banks by the station, and sand swamping try pots and kowhai logs that had to


\textsuperscript{330} Hay, \textit{Reminiscences of Earliest Canterbury (Principally Banks Peninsula) and Its Settlers}, 16.

\textsuperscript{331} One French officer, Dubouzet, noted that ‘there is plenty of vegetation beyond the sand dunes which lie all around the anchorage’ (emphasis added) Wright, \textit{Voyage of the Astrolabe}, 25.

\textsuperscript{332} Shortland, \textit{The Southern Districts of New Zealand; a Journal, with Passing Notices of the Customs of the Aborigines}, 9.

\textsuperscript{333} Monro, in D. Monro, " ‘Notes of a Journey through a Part of the Middle Island of New Zealand’ ” in \textit{Contributions to the Early History of New Zealand} (London: 1898), 243-44.

\textsuperscript{334} ‘Otago Heads Native Reserve,’ \textit{New Zealand Parliamentary Debates} 25 September 1891, vol. 82 September 6-October 6, 602-03

\textsuperscript{335} Church, \textit{Otago's Infant Years}, 37.
be dug out of the beach.\textsuperscript{336} To stabilise the shore, Harwood had organised the construction of a grotesque sea wall of whales' heads between Weller's Rock and his store.\textsuperscript{337} This was futile: by 1870 'a pretty broad slice of land' on which the whaling settlement had stood had 'been washed away by the sea' and Harwood's house, the sole survivor of the settlement, stood on the beach itself.\textsuperscript{338}

Because only the whales' outer layer of blubber and oil-rich tongue were cut out and fed into the try pots, while the remainder of their vast bodies were left on shore to rot, whaling polluted the shore and adjacent water. David Monro's description of Waikouaiti would have fitted Otakou also:

\begin{quote}
The whole beach was strewed with gigantic fragments of the bones of whales, and flocks of gulls, cormorants, and other sea-birds, and savage-looking pigs, prowled about to pick up the refuse. The place altogether, like other whaling stations, is a picture of the most perfect neglect...\textsuperscript{339}
\end{quote}

Even some of the most valued new organisms could be a decidedly mixed blessing. Pigs are omnivorous and highly efficient foragers which thrrove in both New Zealand forests and on open plains.\textsuperscript{340} Their populations were now exploding. Though his account is muddled, there may be some truth in L. Langland's account of more pigs being landed in Otago in 1829.\textsuperscript{341} A ship's captain 'landed a boar and two sows at Otakou, where they were kept until there was an increase, and then they were boated up and let go at Pelichet Bay.' According to

\begin{itemize}
\item \textsuperscript{336} 26 January 1839 in Church, ed., \textit{Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839}, 282.
\item \textsuperscript{337} Harwood, "Copy of Octavius Harwood Journals," 18 May 1838. Hocken, \textit{Contributions to the Early History of New Zealand [Settlement of Otago]} 244. According to Harwood's journal the wall was between the beach and the cooper's workshop. The location of Edward Weller's 'Big House', later Harwood's store and tavern, is shown in early images. A photo from the mid 1860s shows the store at the foot of the slope just south of Wellers Rock, surrounded by drifting sand. This location is also confirmed by reconstructions from the field books of William Davison, who made a survey of the upper harbour coastline in 1844, and used the flagpole atop the store as a point of reference. These indicate the store was at grid point 32210 87207, based on the modern topographical map 'Dunedin and surrounds' I/44, 1:50 000. See Matthew Campbell, "Preliminary Investigation of the Archaeology of Whaling Stations on the Southern Coast" (University of Otago, 1992), 111, 25.
\item \textsuperscript{338} Thomson, "On the Sand Hills, or Dunes, in the Neighbourhood of Dunedin," 267.
\item \textsuperscript{339} Monro, 'Notes on a journey through a part of the Middle Island of New Zealand,' in Hocken, \textit{Contributions to the Early History of New Zealand [Settlement of Otago]} 241.
\item \textsuperscript{340} Crosby, \textit{Ecological Imperialism: The Biological Expansion of Europe, 900-1900}, 173-75.
\item \textsuperscript{341} It is likely Langland's gained his information from William Haberfield, by then a very old man, whose memory was not reliable. Langland's account has it that these were the first pigs in Otago, though as we have seen they were already being traded in 1826, and were introduced from Tasmania by the whaling barque \textit{Elizabeth Mary}, under Captain Wiseman. The closest likely candidate, if this account has any truth in it, is the \textit{Elizabeth}, a schooner out of Sydney under Captain Wiseman, which was trading back and forth between New Zealand and Sydney over 1828 and early 1829, and returned with cargoes of pork and flax. Should this be so, it adds credence to the idea that Kent may have established agents at Otakou in the 1820s, as he had at Foveaux Strait and banks Peninsula.
\end{itemize}
Langlands, John Hughes raided the herd to stock Moeraki, after he commenced whaling there in 1836, and it was from these two sources that pigs spread out over Otago, soon so numerous they were ‘like flocks of sheep’.342

Such a rich source of fat and protein was obviously a valuable trading commodity, and pork an increasingly important food for Maori, but the catholic diets that helped pigs thrive also made them troublesome domestic animals. Pigs were partial, for example, to both potatoes and to shellfish such as cockles. Their rooting among the cockle beds at Otakou made both pigs and shellfish much less palatable. The French explorer D’Urville and his officers found the cockles ‘so horrible to taste that we were soon forced to abandon them’, while several of the officers lamented the taste of the ‘nasty’, ‘briny’, and ‘absolutely revolting’ pigs, attributing the foul taste of the pigs to the fact they fed on ‘the shellfish that the sea throws up in huge quantities’.343 It is also possible however that the pigs’ taste was due to their feeding upon juvenile squat lobsters (Munida gregaria) or ‘red krill’. Arriving at the end of summer the French saw:

[s]everal times a day...the surface of the water become absolutely red from the enormous quantity of prawns that the incoming tide brings up and that the ebb carries back to the sea or throws up on to the beaches. Here and there in the bay there are masses of these prawns forming layers five or six inches thick, which give off a foetid smell.344

The French were unlucky to arrive when rotting Munida contaminated the shore. Yet their attitude to Maori perhaps did them no favours either – Maori did not choose to provide them with uncontaminated cockles, and supplying them with ‘fishy pigs’ was perhaps a deliberate

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342 See ‘Reminiscences of Early Days: Wild Pig Hunting,’ Otago Witness, 11 August 1909, 13. This is presumably the Elizabeth and Mary, which however does not appear in the shipping record until 1834, and then not under Captain Wiseman. See Church, Otago’s Infant Years, Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839.  
343 Wright, The Voyage of the Astrolabe, 19-20, 26-27.  
344 Ibid., 29. The French officer who attributed the pigs’ foul taste to ‘shellfish’ did however clearly differentiate these from the ‘prawns’.
insult. For at least by 1843, and probably well before, Maori had adjusted to the ecological problems pigs posed.

Edward Shortland met Maori at the head of Otago Harbour in December that year, and in an illuminating passage recorded how the Otakou Maori husbanded their pigs there:

it is the custom of this people to select, for pig runs, places distant from their ordinary cultivations, whither they transport a great part of their stock, when the crop is in the ground; leaving it to range at will till the season of storing the potatoes is past. They then catch as many as they require, and take them back to the plantations, in order that they may root up whatever food has been left in the ground.

They now and then visit these pig-runs – as on the present occasion – to watch over the safety of their property, or to catch and mark the young ones; feasting at such times on the flesh of boars, which are killed by preference to prevent their becoming too numerous.

It has sometimes happened that a party of Europeans, falling in with one of these preserves far away from any habitations, have taken it for granted that the pigs were wild, and, with this idea, have hunted and killed them, as if they had as much right to do so as any one else. Such heedless acts, however, have been a fruitful cause of complaint.

In adapting to an economy incorporating root vegetables and pigs, the Otago people reproduced something of the ancient agricultural complex of tropical Polynesia. Their husbandry was both economically and ecologically sensible: moving the pigs to back and forth between fern root grounds and the potato plantations both protected the cockles, ensured the fattened pig’s taste, and thoroughly turned over the potato grounds, helping maintain the soil. It is significant also that Shortland records Maori killing boars in an attempt to manage the population; this may reflect an awareness that pigs were liable to become too much of a good thing, and destroy other valuable resources such as the prime fern root grounds.

Mrs Monson, a resident of Otakou who arrived in the early 1840s later recalled ‘woe betide the man who sold a fishy pig to a ship. He was a marked man for the rest of his time in Otago. His neighbours sent him to Coventry in real earnest.’ See ‘Otago Early Settlers’ Association,’ Otago Witness, 7 September 1904, 11. Pigs raised by Maori were notoriously ‘fishy’ however, as this riddle told in Sydney and elsewhere reveals: ‘Why is New Zealand pork like West India turtle? Give it up. ‘Cause its, flesh, fish and FOUL.’ See Ray Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration" (University of Otago, 1966), 87 fn.50.

This practise clearly pre-dates 1843 by some years, as confirmed by Shortland’s description of it as a ‘custom’ and by L. Langland’s reminiscences.

Shortland, The Southern Districts of New Zealand; a Journal, with Passing Notices of the Customs of the Aborigines, 175.


According to Haast, all the pigs at Taramakau were destroyed when they began digging up valuable fern root grounds. Cited in Ibid., 227, fn.12.
Pig husbandry was a key domain over which the whalers and Maori had to negotiate terms. Shortland records the Maori marking their animals to help protect them from the whalers. It is interesting to note in this respect that in 1839 the Wellers began to breed pigs on one of the islands up the harbour; this would have allowed the Wellers to maintain control over a discreet population, and establish a clear separation between the pigs belonging to Maori. The problems over the whalers poaching of pigs nevertheless continued until, apparently, matters came to a head about 1845. At this point some of the whalers, growing short of meat in winter, killed some of the Maori pigs, and the Maori threatened a general retaliation. The culprits were instead identified, and the whalers branded their pigs thereafter to distinguish them.

In summary, over a decade of intensive settlement had transformed the land around the whaling station. The whalers had not only introduced a variety of species, but had made considerable efforts to create habitats for them by cultivating and fencing off land. The pingao, tussock, flax and forest of the foreshore had largely gone, replaced by gardens and cultivations. The result of vegetation clearance was that the settlements behind Te Rauone beach were beginning to be swallowed by encroaching sand blown off the bare foreshore dunes, while further problems with erosion are evident in the whalers' extensive efforts to shore up the coastline using whales' heads as a bulwark against the water.

Introduced animals such as rats, and to a lesser extent pigs and cattle were beginning to affect a much larger area, but direct human influence beyond the fringes of settlement was limited. The bulk of the whalers did not venture up the harbour to the station's hinterland, though the gentlemen – Edward Weller, Harwood, and the doctors, would go shooting up the river on a Sunday. The more permanent settlers of the early 1840s did gather timber and pork all over the inner harbour sides, and spent much more time in the upper harbour. Maori on the other hand utilised the upper harbour and the outer coasts much less than they had in the past, as their diminished population clustered about the whaling station. Because Maori no longer

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352 As recorded in Harwood's journal, and in letters home to his family. For example, in a letter written home on 18 March 1838, soon after arrival here, Harwood recorded: 'Game is so abundant here that I have been out with Mr Wr and in the course of a few hours filled the boat with all kinds of water fowl.' Church, ed., Gaining a Foothold, 298. For a representative sample of these shooting excursions see also journal entries for 1838: 3 June; 24 June; 5 August; 4 November; 2 December; 9 December; 17 December; 30 December. Harwood, "Copy of Octavius Harwood Journals."
lived on the great bulk of the Peninsula it appeared to the influxes of European settlers as an untouched arcadia. When David Monro visited in 1844 he admired

an amphitheatre of wooded hills... uniformly covered with trees, which clothe them from their summits to their bases, where they hang over and are reflected in the water... . The weather while we lay at Otago was most beautiful. The sky, a great part of the time, was without a cloud, and not a breeze ruffled the surface of the water, which reflected the surrounding wooded slopes, and every sea bird that floated upon it, with mirror-like accuracy. For some hours after sunrise, the woods resounded with the rich and infinitely varied notes of thousands of tuis and other songsters. I never heard anything like it in any part of New Zealand. It completely agreed with Captain Cook's description of the music of the wooded banks of Queen Charlotte's Sound.\(^{353}\)

Monro had arrived as part of the party accompanying Frederick Tuckett, the surveyor entrusted by the New Zealand Company with the task of selecting the site for the proposed Scottish Free Church settlement to be called 'New Edinburgh'. Tuckett too liked Otakou for its fine harbour, ample supplies of wood, and access to a large flat and fertile hinterland.\(^{354}\)

He chose to site the proposed company settlement here, and began to negotiate to buy the lands of the Maori living on the Otago Peninsula. This marked the key act in a succession of negotiations over property which had paved the way for Maori to contemplate such a crucial transaction, with a reasonable understanding of what, in European eyes, selling land entailed.

### 6.6 Perception of property: selling Otago 1839-1844

Maori and European perceptions of property had some fundamental differences, though to treat their perceptions as a simple binary of communal versus individual ownership is to caricature both. There were in fact enough shared concepts that common understandings eventually evolved. As we have seen, Maori tenure of land, though generically held in common under the mana and political control of leaders, was also overlain by a complex network of specific usufructory rights distributed amongst communities of mixed tribal descent. Europeans too had a variety of agreed ways to legitimate title, and to distinguish layers of tenure and distinct land uses (embodied in such distinctions as private and common lands, and various separable uses of these – grazing rights, mining rights, lease of land, and so forth). But for bargains to be struck and adhered to, in a nascent community without

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\(^{353}\) Monro, "'Notes of a Journey through a Part of the Middle Island of New Zealand’ ”, 243-44.

\(^{354}\) 'Mr. Tuckett's Diary', Appendix A, in Hocken, *Contributions to the Early History of New Zealand [Settlement of Otago]* 213; 'Letter from Mr. Tuckett to Dr. Hodgkinson, Otakou, August 16, 1844. Port of New Edinburgh', Appendix B in Hocken, *Contributions to the Early History of New Zealand [Settlement of Otago]*, 227.
agreed sovereign authority, a tenuous shared understanding and a considerable degree of trust had to develop.

Meanwhile, differences over the mores surrounding property and production in making new uses of the environment made disputes inevitable, and these had to be negotiated in the absence of mutually agreed authority. Outside assistance was therefore helpful. While at Otakou, for example, Shortland recorded being called on to obtain compensation from a Maori man who had destroyed ‘several 100 yards of bullock fence’. Shortland discovered that the Maori man had actually built most of the fence, but was provoked when, in a dispute over payment, he was cursed by his European employer, who threatened to set dogs upon him; European curses ‘box your ears’ for example, were often inadvertently extremely offensive to Maori concerned to maintain the tapu of their head. The Maori man’s chopping down of the fence was obviously seen as appropriate by his people, and this left the matter of how the European’s could gain satisfaction hanging.

Managing such matters in the absence of any agreed jurisdiction required delicate diplomacy. New arrivals had to learn fast that Maori authority was not to be trifled with, and that Maori understandings of property still often prevailed. When Philip Ryan came to Otakou in 1840 as assistant cooper for the Wellers, he scuffled with Taiaroa on his second night, after the chief had taken bread from the Maori wife of the head cooper. Though Ryan retrieved the bread, he later recalled that the head cooper was aghast, exclaiming ‘you’ll get us all killed for this!’ and advising ‘You’ll never do here! ‘You had better go back to Sydney!’

Whenever a measure of external authority began to appear in the European world, Maori leaders such as Taiaroa were quick to grasp that they offered levers of power in their own sphere. In 1842, for example, several Maori at Otago had together bought a whale boat, for the handsome price of 700 baskets of potatoes and 42 pigs. The purchasers included the leaders Karetaia and Te Matahaere, as well as Kohi (cousin of Taiaroa, and head of his family at Koputai, now the location of Port Chalmers). Kohi soon believed he was about to die and,

356 ‘Reminiscences of Phillip Ryan’ G.C. Thomson Papers, MS-0439/03 (I-Z), Hocken Collections.
fearing his young son would be denied his inheritance in that event, burnt the boat. 357 The other owners were furious; Karetai remonstrated with him, and Te Matahaere retaliated by burning Kohi’s house, and stripping and beating him. Taiaroa was Kohi’s tuakana, his senior relative; it fell to him to obtain recompense in turn. His solution was to persuade Kohi to allow himself to be strangled, after which Taiaroa approached Reverend Watkin and informed him that Karetai and Te Matahaere had caused Kohi’s death; he had Watkin write a letter seeking their arrest for Kohi’s murder, which Taiaroa promptly bore to the nearest enforcer of European law, the Police Magistrate at Banks Peninsula. 358 As Shortland urged, we should ‘observe the facility with which Taiaroa appeared to adopt our laws, while he was really only endeavouring to make use of them, as far as they served him to carry out his own ideas of what was befitting’. 359

It is worth considering what Taiaroa thought was befitting. Taiaroa was in a delicate position here. He had to regain Kohi’s mana, loss of which stained his mana also, and this meant acts that would inevitably diminish that of Te Matahaere and Karetai. Yet he lived close by Te Matahaere and Karetai, who was also his first cousin, and foremost rival for political control over the Otago domain. He had in fact established residency at Otakou, and had been gifted land there, largely on the basis of marriage into Karetai’s family. Direct confrontation had the potential to engulf all the Otago people in a protracted feud. His neat solution offered the chance to embroil Te Matahaere and Karetai in difficulty, but without making conflict between with him certain. Taiaroa’s actions in embroiling European’s were thus motivated by the need to sustain his mana, and that of his relations; they reflect that fact that this was still a society where Maori concepts held sway. It is particularly necessary to bear this fact in mind when considering the spate of land sales that occurred toward the end of the 1830s, and Taiaroa was notably heavily involved in ‘selling’ land to Europeans.

In the late 1830s when it became clear that Britain would formally incorporate New Zealand into her empire, European demand for Maori land soared. 360 A series of transactions followed, ranging from the highly dubious to faithfully observed bargains. At one end of this

357 Ibid., 19-20.
358 Ibid., 20-23.
359 Ibid., 24-25.
360 Dacker records that the first sale occurred in 1829 (the Preservation Inlet whaling station); by 1840 29 transactions are recorded, of which 22 occurred between 1838 and 1840. See Dacker, "He Raraka a Ka Awa," 55.
scale unscrupulous Australian merchants attempted to buy enormous parcels of property for a pittance. The Wellers were keen purchasers, and by 1840 claimed title to almost 3,000,000 acres of the South Island, as well as Stewart Island, and significant assets in the North Island. Maori such as Taiaroa happily ‘sold’ land to Europeans again and again; these transactions were probably initially innocent, in that Maori were accustomed to allowing people access to resources, in return for an ongoing relationship, and hence reciprocal obligations. But Maori at Otakou, exposed to extensive and continuous contact with Europeans, could not have avoided soon becoming aware that Europeans did not see transactions over land in this way at all. Therefore the increasing frequency of cases such as opportunist ‘sales’ to transient shipping captains, who might never return, are perhaps best seen as simply a means to take advantage of the Europeans.

Maori interpretations of what transactions involving property meant remained dominant in this period. If they did not concede rights had been given, they could make life untenable for European purchasers. Accordingly, it is problematic whether any transactions approached the full alienation of land, as Europeans saw it. Certainly, many transactions conferred recognised rights of occupation and use. Thus, as Shortland realised, transactions where very large amounts of land were concerned were typically an acknowledgement by Maori of whalers’ needs for land to establish their station, and of ‘squatters’ rights’ to extract resources from the sea adjacent to their ‘purchase’. This form of tenure was known as ‘he noho noa iho’. It was in no way a sale, but almost identical to granting a squatting lease.

Traders such as Harwood, who negotiated for smaller plots of land, upon which they then lived, and interacted with the Maori community, occupied a different position. That two very different sorts of transfer of rights are at issue is manifest in the prices paid, and in the different ways Maori subsequently treated the transactions. Thus, in 1839 the Wellers ‘purchased’ from Taiaroa and Karetai a vast swathe of land that they estimated at two million acres, including all of the Peninsula, and much of coastal Otago, for £66 and 10 shillings – but were forced to ‘repurchase’ the land the very next year for £100. In contrast, Harwood

paid Taiaroa, Karetai and Pokene £100 for only one acre around his house, and his right to that land was not disputed by Maori. 364

It is best to see Harwood as having been accepted in the traditional sense as part of the community, gaining land through the practise of tuku whenua. This permitted ongoing use of the land, provided obligations to the community were upheld. Harwood had married into the Maori community at Otakou, and had an established and ongoing relationship of mutual benefit with Maori leaders. These are the sorts of considerations that Maori traditionally emphasised as providing an ongoing right for outsiders to occupy and use ancestral land. It is significant that these are the same considerations Harwood himself emphasised when he later pleaded his cause to Governor Fitzroy: he argued he should be treated as a 'special case' because of his length of stay on the land, and his relationship to 'Tuterakipawa' son of the rangatira Pokene and brother to Harwood's wife, whom Harwood said 'was adopted by me and called after my name for fourteen years'. 365 This was a fairly permanent arrangement, therefore, precisely in so far as Harwood had established an enduring relationship between himself and his family with local Maori. Even this then was not fully an alienation of property in the European sense, in which a seller no longer had any relationship with the land, or (necessarily) with the buyer. Otakou Maori would never have conceived that Harwood could bar them access and a right of passage across their ancestral land; and if Harwood had left, Maori leaders would have resumed their full rights over it once more.

Maori and European understandings of their transactions were put in question by proclamation of British sovereignty. In preparation for the acquisition of New Zealand by the Crown, Captain William Hobson, the imperial representative in New Zealand, was instructed on 14 August 1839 to investigate all claims to land, and ascertain their entitlement for Crown grants. 366 Hobson was advised that if, as he had argued, the South Island was 'uninhabited, except by a very small number of persons in a savage state, incapable from their ignorance of entering intelligently into any treaties with the Crown', then he should assert British

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364 Extract from 'The Memorial of Octavius Harwood...to His Excellency Captain Robert Fitzroy...Governor' cited in Church, ed., Gaining a Foothold: Historical Records of the East Otago Coast 1770-1839, 322.
365 Extract from 'The Memorial of Octavius Harwood to His Excellency Captain Robert Fitzroy' in G.C. Thomson papers, Hocken Collections, MS 0438/06. Cited in Church, ed., Gaining a Foothold, 401.
366 Instructions from the Colonial Office to Captain Hobson, regarding Land in New Zealand 14 August 1839' cited in Church, ed. Gaining a Foothold, 401.
sovereignty by right of discovery. Under instruction from Governor Gipps of New South Wales, Hobson issued a declaration to this effect on 21 May 1840, forthrightly claiming the South Island ‘by virtue of the right of discovery’, following the doctrine of terra nullius. The south was held to be empty land, with too few inhabitants to matter. In this decision there are both distant echoes of Cook’s superficial observations of an almost empty land — and the resonance of the impact of disease in depopulating the Peninsula and elsewhere.

Thus, when a copy of the Treaty of Waitangi was brought south to Otakou in June 1840 by H.M.S., it was an afterthought, a ‘mere illusion and pretence’ Hobson had felt, and one that he had believed was best avoided. The Maori at Otakou did not accord it much weight either. According to Harry Evison, only Korako signed aboard ship on 13 June. Karetai’s name was added, but he did not sign. Such signings of the Treaty in the south did not transfer sovereignty to the Crown for Europeans, for whom it was already a fait accompli, or Maori, for whom such a radical act could not have been legitimately done without the approval of the leading leaders Karetai, Taiaroa, and Tuhawaiki, acting with the consent of their people.

The Treaty was not the basis of Kai Tahu’s continuous and vociferous complaint during the nineteenth century, in which it rarely if ever found mention. The Kai Tahu claim was rather predicated on perceived injustices stemming from the critical land sales, those to the New Zealand Company and subsequently the Crown, beginning with the sale of the ‘Otago Block’ in 1844.

The European background to this sale will be discussed in detail subsequently. For now, it is sufficient to note that the purchasers were the New Zealand Company, represented in New Zealand by Edward Gibbon Wakefield’s brother Colonel William Wakefield. They wished to select at least 120,550 acres of land for ‘New Edinburgh’ a proposed Scottish settlement to be based on small farming. They had gained Governor Fitzroy’s approval to buy from Maori 150,000 acres of land, at a place of their choosing, subject to close Government supervision. The eventual Otago land sale on 31 July 1844 was the culmination of a complex process of selection, inspection, and negotiation, which involved three key groups of people: New

367 Ibid., 5’ Dacker, "He Raraka a Ka Awa," 57, fn.71.
368 Harry Evison, Te Wai Pounamu, 45-47, 127-34; Harry Evison, The Ngai Tahu Deeds (Christchurch: Canterbury University Press, 2006), 36. Harwood was away at the time, but simply noted on return that ‘Herald, Sloop of War, had been in and left a paper for the Natives’ perusal.’
Zealand Company officials, Government officials, and Maori. Given the critical significance of the sale of the ‘Otago Block’ to the New Zealand Company in 1844 it is essential to consider what understandings each party brought to the transaction. How far did they share a common conception of what this sale of land entailed?

All the Europeans regarded this sale as ideally utterly extinguishing all prior right to the land, and substituting secure, absolute and transferable titles ultimately derived from the Crown. The general consensus is that none of the Maori could have shared this view. As Alan Ward, for example, puts it, the basis of Otago Maori past experience in selling land, ‘did not create an understanding of sale in the sense in which it would be embodied in the later Crown purchases’. It is yet clear from the care and elaborate ceremony with which this sale was surrounded by both parties that Maori were well aware they were engaged in a different and new sort of transfer of rights. The problem is that ultimately the land sale did not clearly establish what these were.

The process began with the surveyor Frederick Tuckett conducting a thorough examination of the entire south eastern seaboard of the South Island over April and early June 1844 in search of the site. Fitzroy appointed John Jermyn Symonds to superintend Tuckett’s progress, but the two fell out immediately, and by the time Tuckett had settled on his site Symonds had returned to Wellington to complain of Tuckett surveying Maori land without their permission. Tuckett’s selection centred on Otago Harbour, spreading south and inland to include the Taieri and Molyneux Plains. In the second week of June the parties assembled at Koputai (Port Chalmers) on the shores of Otago Harbour: Tuckett walked back from the south, Symonds, returned from Wellington accompanied by Daniel Wakefield (William Wakefield’s younger brother and deputy), Tuhawaiki, and Taiaroa. Karetai and other leaders soon came to meet them.

Symonds’ role was to ensure there were no misunderstandings that might lead to a repeat of the Wairau affray. He insisted that the boundaries of the block Tuckett had selected were

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371 This summary of the events that surrounded the land sale is largely drawn from the authoritative account provided by the evidence presented to and summarised by the Waitangi Tribunal, "Ngai Tahu Land Report," (Waitangi Tribunal, 1990). For another useful perspective see Evison, Te Wai Pounamu; Evison The Ngai Tahu Deeds.
mutually observed and agreed. Tuckett refused, resigned, and on the morning of 18 June an irate Symonds returned to Wellington for the second time, having only established that Maori were very willing to sell the block, as roughly outlined, subject to whatever they reserve. In the interim, Tuckett negotiated with the principal Maori involved, Tuhawaiki, Taiaroa, and Karetai.

Their negotiations focused on differences over the price of the land and, crucially, over the status of the Peninsula. At an initial meeting on June 18, the Maori stated their desire to retain the entire Peninsula, and various rangatira named purchase prices much higher than the £2000 Tuckett was authorized to offer – Tuhawaiki, for example, suggested a million pounds. Today this might seem a much more reasonable figure than the paltry sum Maori settled for, which amounted to about only one penny per acre of land, but it must be remembered both that the New Zealand Company became bankrupt only a few years later, because there was insufficient demand for their land, and that the Otago Maori were extremely keen to attract settlement as a market for their produce and a ready source of European goods. The real benefit of the sale to Maori, certainly in European eyes, and probably in their own, would come with the arrival of settlers, creating a market for their produce, and allowing easy access to European goods.

On 20 June the key features of the eventual deal were struck: a purchase price of £2400 was settled, for a roughly agreed block of land, the boundaries of which later proved to enclose 533,600 acres (it was stated at the time to be 400,000 acres). Maori convinced Tuckett they could not be parted from the northern third of the Peninsula, as well as lands at Taieri and Karoro. But they could not convince Tuckett to let them retain all of the Peninsula. Tuckett was determined not to leave the Peninsula in Maori hands for two reasons. His map displaying the proposed deal, and demarcating land suitable for settlement shows he recognised the Peninsula would inevitably have a strategic importance to the proposed town. He was anxious not to leave Maori in control of the land occupied by the European squatters on the Peninsula; this might allow the development of a rival settlement.  

373 Evison, Te Wai Pounamu, 205.
Figure 12 (above) clearly shows how the Otago Harbour acted as the funnel point of access to all the lands planned for settlement, and why allowing a rival settlement to overlook the entrance to the harbour was quite unacceptable.

But when William Wakefield arrived on 16 July with the government officials William Spain (Commissioner of Land Claims), Symonds, and Assistant Protector of Aborigines George Clarke, Tuckett recommended Wakefield accept he could not buy the northern third of the Peninsula, despite the fact this land contained the nascent mixed community. Wakefield too proved very reluctant to accept that even this portion of the Peninsula would remain outside the block. On the other hand Karetai and Koroko were still determined to retain the Peninsula from Puketai (Andersons Bay). Wakefield however threatened to call off proceedings unless most of the Peninsula was sold. 375 The leaders who most urgently sought to retain the

374 Frederick Tuckett, Sketch of the Rural Districts of New Edinburgh 1844, Hocken Collections, S07-520a.
375 This is substantiated by the testimony of both Horomona Pohio and Rawiri Te Maire Tau to the Smith Nairn Commission in 1880. In addition H.K Taiaroa stated to Mackay that Hoani Wetere Korako wanted to fix the
Peninsula were those such as Karetai who were mana whenua there, and who therefore had strong Kati Mamoe ancestry. Those whose central lands were not in question, such as Tuhawaiki and Taiaroa, could more easily contemplate the sale.\textsuperscript{376}

Parting with the northern Peninsula however, the burial places of the bones of their ancestors as well as their current homes, was simply out of the question for the Otakou Maori. To convince Wakefield that they would not part with this sacred ground Tuhawaiki made his famous speech on 27 July before Wakefield, Symonds and Clarke from the summit of Ohinetu Hill, above Omate.\textsuperscript{377} As recalled by Clarke, his explanation of why they would not sell Otakou was a masterful piece of rhetoric.

Look here, Karaka, here, and there, and there and yonder; those are all burial places, not ancestral burial places, but those of this generation. Our parents, uncles, aunts, brothers, sisters, children, they lie thick around us. We are but a poor remnant now, and the Pakeha will soon see us all die out, but even in my time, we Ngailaki were a large and powerful tribe, stretching from Cook Strait to Akaroa, and the Ngatimoe to the south of us were slaves. The wave which brought Rauparaha and his allies to the Strait, washed him over to the Southern Island. He went through us, fighting and burning and slaying. At Kaikoura, at Kaiapoi, and at other of our strongholds, hundreds and hundreds of our people fell, hundreds more were carried off as slaves, and hundreds died of cold and starvation in their flight. We are now dotted in families, few and far between, where we formerly lived as tribes. Our children are few, and we cannot rear them. But we had a worse enemy than even Rauparaha, and that was the visit of the Pakeha with his drink and his disease. You think us very corrupted, but the very scum of Port Jackson shipped as whalers or landed as sealers on this coast. They brought us new plagues, unknown to our fathers, till our people melted away. This was one of our largest settlements, and it was beyond even the reach of Rauparaha. We lived secure, and feared no enemy; but one year, when I was a youth, a ship came from Sydney, and she brought the measles among us. It was winter, as it is now. In a few months most of the inhabitants sickened and died. Whole families on this spot disappeared and left no one to represent them. My people lie all around us, and now you can tell Wide-awake (Wakefield) why we cannot part with this portion of our land, and why we were angry with Tuckett for cutting his lines about here.\textsuperscript{378}

\textsuperscript{376} Herries Beattie, "Southern Maoris," (Dunedin: Hocken Library, n.d.).
\textsuperscript{378} George Clarke, Notes on Early Life in New Zealand (Hobart: the author, 1903), 62-3. There are numerous points of interest in this speech, the only record of which is in George Clarke’s memoirs published in 1903. The accuracy of the speech is therefore open to question, though Clarke was purportedly fluent in Maori, and it agrees with his evidence given to the Smith-Nairn Commission of 1880. See Ward, "Land Report for Ngai Tahu," 107. It is worth noting Tuhawaiki’s pervasive sense of despair at his people’s prospects, and the emphasis on the rapidity and scale of the measles’ impact. Indeed William Wakefield believed the chief motive for the sale was the belief their people were dying out.
Like Tuckett, Wakefield was forced to agree that Otakou Maori would retain the northern third of the Peninsula where their villages and urupa were. Wakefield estimated this area at 10,000 acres, though it proved to be only 6665.\textsuperscript{379} In the Maori version of the deed of sale, these ancestral lands that were withheld from the sale were referred to as ‘Nga wenua kua kotia e matou mo a matou tamariki’ – ‘The portions of land that we have cut away entirely for us, for our children’.\textsuperscript{380} Yet in the Otago Deed’s English translation, and in the minds of European settlers who soon surrounded them, they became ‘reserves’. On 31 July 1844, the Deed was signed by five leaders, and marked by another twenty (in its primary Maori version), and the purchase money given to Tuhawaiki, Taiaroa and Karetai for distribution to their people.\textsuperscript{381}

Otakou Maori subsequently claimed that the sale was only agreed to because William Wakefield promised them the ‘tenths’ (actually in effect an eleventh of the land purchased held by the Government, but set aside primarily to provide for Maori) as had been the case with previous New Zealand Company purchases at Wellington, Nelson and New Plymouth.\textsuperscript{382} Whether or not such promises were made, they were not written into the Otago Deed. For here the Company intended the government should make any such arrangements subsequently. Symonds, the government’s representative at the sale, made ‘no express stipulation’ with the Maori vendors thinking it was ‘beyond the comprehension of the aborigines’. He left this decision to the governor.

In 1990 the Waitangi Tribunal found that Governor Fitzroy did not issue any instructions regarding ‘tenths’, or any other provision for further reserves. Their conclusion derived from the fact that though Richmond, the Superintendent of New Munster (which included all of the South Island) wrote to inform Fitzroy that he would demand the tenths, Fitzroy’s reply was ambiguous.\textsuperscript{383} Fitzroy had intended to make further provision for Otago Maori, though it is

\begin{footnotesize}
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\item \textsuperscript{379} Tribunal, "Ngai Tahu Land Report," 53.
\item \textsuperscript{380} Evison, \textit{Te Wai Pounamu}, 206.
\item \textsuperscript{381} Peter Tremewan, \textit{Selling Otago} (Dunedin: Otago Heritage Books, 1994), 37. Their relative importance is revealed in the money awarded. Tuhawaiki received £1000, Taiaroa and Karetai £300 each.
\item \textsuperscript{382} The first documented claim for the tenths however was Topi Patuki’s petition to the Queen in 1867. Considerable correspondence from Otago Maori to government officials over the previous years contained no reference to tenths. For discussion, see Ward, "Land Report for Ngai Tahu," 100-02.
\item \textsuperscript{383} Tribunal, "Ngai Tahu Land Report," 14; Despatch No.7 ‘J.J. Symonds to the Superintendent of the Southern Division Wellington, 2\textsuperscript{nd} Sept 1844. See Mackay, \textit{A Compendium of the Official Documents Relative to Native Affairs in the South Island} 102-03; Despatch from his Honour the Superintendent of New Munster (Copy of), Dated 12\textsuperscript{th} June 1844. In Mackay, \textit{A Compendium of the Official Documents Relative to Native Affairs in the South Island} 100A.
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unlikely he had ‘tenths’ in mind (the tenths had proved universally unsatisfactory to Maori and Pakeha elsewhere), but he saw no need for haste.\textsuperscript{384} As it transpired, Richmond died soon after, Grey replaced Fitzroy as governor, and the settlers did not arrive for another four years. By then Governor Grey had granted the settlers Crown title to the Otago block, and neither he nor they ever entertained the idea of further substantial reserves within that block for the Otago Maori.\textsuperscript{385} The Tribunal found that this failure to provide land may not have breached the terms of sale, but certainly abrogated Maori rights under the Treaty of Waitangi.\textsuperscript{386} That is, they were denied access to their forests, and fisheries – the sources of mahinga kai. This loss was the key problem the sale had for the Otago Maori, and it was surely unanticipated by them.

The sale of the Otago Block to the New Zealand Company in 1844 was by far the most significant event that shifted control over the Peninsula – and of Otago generally – from Maori to Europeans. In the wake of this and subsequent sales, most especially Kemp’s Purchase of 1848, that (at least according to the Deed) sold the great bulk of the South Island, the Otakou Maori were stranded on the northern tip of the Otago Peninsula, confined to meagre portions of their once vast property. The way was thereby opened to European settlement, and the making of a new environment on the Otago Peninsula.

\textsuperscript{384} Ward, "Land Report for Ngai Tahu," 110.
\textsuperscript{385} Ibid., 111.
\textsuperscript{386} Tribunal, "Ngai Tahu Land Report," 59.
Improving God’s Creation

The Cormorants, rose out of the water as we approached by thousands, land snipes, gulls, the scenery as we gained Port Chalmers, where we anchord, put me in remembrance of a great part of the Cumberland scenery, the imagination fired, and here will nature triumphant and bring the mind to rejoice, and adore the divine being—

Thomas Ferens, 23 March 1848

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Chapter Seven

The Scottish Settlement and the Otago Peninsula: 1848-1861

We were in the pursuit of health – and had an ill-defined notion that somehow or other, let but the preparatory or preliminary labour of settlement be once accomplished, our toils would vanish, and the Eden of perfect rest and peace into which we believed we had dropped, yield richly the fruits of this new earth, all but spontaneously to our hands, free of all those hard inevitable requirements, which Nature and Providence impose everywhere else. But, false or true, buoyed up by these dreams, we worked hard for a time with axe, grub-hoe, and spade, felling trees and uprooting flax and fern...2

James Barr ‘The Old Identities’

7.1 Planning arcadia: the survey of Otago Peninsula

Over two years of intense effort in 1846 and 1847 Charles Kettle and his team of assistants surveyed the landscape surrounding Otago Harbour, and mapped out the form the proposed settlement was to take.3 In 1848 Kettle produced the culmination of this work: the ‘Index Map of the Otakou Settlement, Middle Island, New Zealand – surveyed in the years 1846 and 1847 – C.H. Kettle’.4 Kettle’s plans and the surveys in his wake lay bare the shapes that the Scottish settlement was to take, and the divisions of land into property they charted still shape how humans interact with the Otago Peninsula.

The most basic decision affecting how the Peninsula would be incorporated within the settlement was Tuckett’s selection of the head of Otago harbour as the site of the

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4 A.H. McLintock, The History of Otago (Christchurch: Capper Press, 1949), 144. Kettle’s instructions also highlight the naivety of the settler’s expectations. He was told that he was to not only map the area, setting aside suitable reserves for various purposes, but also to buoy the channel for shipping and, last but far from least, construct a road between Koputai (Port Chalmers) and Dunedin. Kettle accomplished much of this, but unsurprisingly, he did not build the road! See Kettle, "Letter Book of Charles Henry Kettle Chief Surveyor of the Settlement of Otago.”, McLintock, The History of Otago, 144-45.
principal town; Kettle was instructed to follow his choice. It is interesting to consider what forms the Peninsula landscape might have taken if the opinion of William Mein Smith, who designed Wellington, and visited Otago harbour in 1842, had been adopted. Mein Smith deemed the head of the harbour too far from the anchorage at Port Chalmers, and decided the best town site was the vicinity of Portobello and Broad Bay. Before leaving Scotland, Thomas Burns assessed some of the considerations for and against these locations in a letter to Cargill on March 5 1845, questioning Tuckett’s choice of:

the bleak side of a hill, whereas had he chosen the east side of the harbour, it would have been on the sunny side of the slope – a great point. I know the answer would have been that he would have planted us in the very heart of the Natives. Now, as to this I am not sure but that amalgamation in so small a number would be ultimately safer and better than what appears to be a permanent separate localization.  

Burns’ analysis of Tuckett’s reasoning was largely accurate, as were his predictions. Kettle’s plan meant Otakou and the Maori communities of the Peninsula would have problems communicating with the settlement at Dunedin as it grew after 1848.

As displayed in Figure 13 (below) Kettle envisaged the Peninsula’s south-western fringe would become part of the town, and divided it into ten acre ‘suburban’ sections. This area has become suburban Andersons Bay, Vauxhall and Waverley. Kettle also designated a shoreline strip along the harbour to Portobello, and then a band around Harbour Cone to the margins of Hoopers Inlet, as suburban. Kettle thought the latter ‘some very desirable sections’ as besides access across the Peninsula to Otago Harbour, ‘very deep channels communicating with the sea’ at high tide would provide boats with entry to the inlets.  

He designated the remainder of the Peninsula rural land, but did not map the 50 acre sections.

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5 Ernest Northcroft Merrington, A Great Coloniser the Rev. Dr. Thomas Burns (Dunedin: The Otago Daily Times and Witness Newspapers Co., Ltd, 1929), 117.
Figure 13: Index Map of the Otakou Settlement Middle Island, New Zealand – surveyed in the years 1846 and 1847 – C. H. Kettle (Detail)
Kettle did not make the detailed surveys necessary to precisely allocate sections, and provide secure title. His survey carefully determined the location of specific key points, and used these to accurately map the overall area. As he put it, he did 'no more than design the sections on the map, as I have well marked every point in the survey and they can be laid off with facility whenever they are required'.

Kettle’s mapping and surveying of the Peninsula coastal fringes was essential to its settlement. It provided the first detailed knowledge of the Peninsula landscape, especially of the outer coasts, which had remained essentially featureless in previous maps. But even more importantly, the plan produced by Kettle and his team of surveyors organised natural space into an image that could be used to generate cultural place.

The geometric grid is ubiquitous in early New Zealand town planning, creating what Paul Carter has called ‘a container for real estate...its streets, conduits for auctioneers’. But dividing the rugged and unruly Peninsula landscape into such neat equations has never quite run according to plan. Kettle has been persistently slandered as responsible for designing Dunedin without regard for the landscape. In actual fact, told to replicate the much-admired New Town of Edinburgh, located on a flat-topped hill, he made considerable concessions to the inversion of this topography he found here, a harbour side site surrounded by hills. Some roads his surveyors drew up steep Peninsula slopes have remained ‘paper roads’, but Kettle himself was very conscious that

great care must be taken to obtain such lines of road as will render the section accessible – it would be manifestly imprudent to lay out broken country,

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1 Ibid.
2 See for example Tuckett’s map of 1844. For Kettle’s work on surveying the outer coast see Kettle, "Letter Book of Charles Henry Kettle Chief Surveyor of the Settlement of Otago."
5 Peter Entwisle, "Saving the Romantic City - Charles Kettle's Plan for Old Dunedin," (Hocken Library, 2005).
Kettle performed his task well. He was the first to use the trigonometric method in New Zealand, which was the most accurate way to measure and map space available, and far more suited to rugged terrain than the most likely alternative, the running baseline. The fundamental problem that was to hamper the settlers in their quest to create their desired landscape on the Otago Peninsula was embedded in the settlement’s founding principles.

Most significant among these was the notion, deeply rooted in English culture in the wake of the enclosure movement, that space should be organised by dividing an environment into rigidly demarcated properties, within which each individual proprietor would hold full rights of use. In this case, there was also a democratic imperative that sections should be of equal area. This premise of equal opportunity for settlers to begin to better themselves was also expressed in the system of holding a lottery to decide priority of selection amongst the initial purchasers. It created nominally equivalent units that purported to ease the establishment of a market for the ownership and transfer of title to exclusive property rights.

But despite its ideological and economic justifications, this is an extremely crude way to partition land. It ignores what actually differentiates the world as we interact with it—topography, climate, soils, fauna, and flora. To understand why Kettle never questioned that this was how best to allocate property within the proposed British settlement, we have to better understand what was drawing these people here, from the other end of the earth, in the hope of founding a new society.

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14 Byrnes, Boundary Markers: Land Surveying and the Colonisation of New Zealand, 56-57.
7.2 The world of the Scottish settlers

The genius of the Otago settlement was the Scot George Rennie, a sculptor and politician from a distinguished farming and engineering family, who in 1842 published an article in the *Colonial Gazette* that outlined a scheme for British settlement on the eastern coast of the South Island.¹⁵ Rennie conceived of the settlement as an improved embodiment of Edward Gibbon Wakefield’s vision for ‘systematic colonisation’. Wakefield had wanted to create a ‘Britain of the south’ that avoided the unemployment, unrest, and poverty plaguing Britain in the wake of the industrial revolution; the New Zealand Company was his means to that end.¹⁶ These problems were particularly evident in Scotland, where the agricultural and industrial revolutions dramatically increased food production, and population, which doubled from one and a half to three million between 1801 and 1851, at the expense of the countryside population of tenant farmers cleared from the land by numerous acts of enclosure. This funnelled massive flows of people into the cities, causing explosive urbanization, and widespread unemployment.¹⁷

Believing Britain’s social ills were caused by an excess of population and capital relative to land, Wakefield’s schemes called for transplanting slices of British society incorporating a spectrum of capitalists and wage labourers to colonies with sufficient space for all to flourish. Wakefield, and following him Rennie, argued that capitalists could be assured of a supply of labour, and labour assured of wages, even where land was so plentiful, by maintaining the price of land at an artificially high level — the never-specified ‘sufficient price’. Rennie added an insistence on the need for ‘contiguity’ and ‘concentration’ of settlement.

This particularly appealed to members of the embryonic Scottish Free Church who, in 1843, adopted Rennie’s scheme as a vehicle for their dreams of an exclusive, or as the Reverend Thomas Burns described it to Captain William Cargill, ‘special’ little community blessed with the ‘very delightful privileges of internal harmony and

¹⁵ The definitive account of the genesis of the Otago scheme is still McLintock, *The History of Otago*, 149-238.
Christian unity’. However, Burns’ and Cargill’s insistence on excluding those not of their faith alienated and sidelined Rennie, and these men became, respectively, the spiritual and political leaders of the proposed settlement.

In order to give effect to the adaptation of Wakefield and Rennie’s principles required to maintain the pre-eminence of the Free Church here, the Terms of Purchase for the Otago scheme released in 1843 proposed that Dunedin was to begin as a settlement divided into 2,400 properties. Each property was to comprise 60 and one quarter acres, divided into town, suburban and rural sections of a quarter acre, 10 acres, and 50 acres respectively, sold at an overall price of £2 per acre. Religious exclusivity was to be maintained by allocating £25,000 of the £216,000 fund that land sales were expected to generate, to building a church and school, and paying the salary of the Minister and schoolmaster.

The scheme followed Wakefield’s argument that a high price for land (bought, remember, for roughly a penny an acre) would maintain a labouring class by making it difficult to buy land, concentrate settlement, and allow cohesive communities to recreate the best aspects of British civilization. Of course, the economics of colonisation demanded that land could not be cheap: the Company needed to not only make a return on the sale of land, but use the proceeds to build roads, bridges, and other things of common benefit. But it was also thought fit that labourers should work to earn their independence, and only then partake of the founding myth that this was to be a land of free holding, and God fearing yeomen making farms from the wilderness. It was presumed that once settlers’ had bought land, they would run their land using employed labour, as in Britain. The dominance of the ‘family farm’ was not envisaged at all by the New Zealand Company: the people who owned land,

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19 Tom Brooking, And Captain of Their Souls (Dunedin: Otago Heritage Books, 1984), 32.
20 Ibid., 32, 36. These figures were clearly expected to work closely in tandem – since Burns’ insistence that the schoolmaster be of the Free Church was the issue that opened the breach between he and Rennie, leading to the latter’s ousting.
21 James Beattie, "Lusting after a Lost Arcadia: European Environmental Perception in the Dunedin Area, 1840-1860" (University of Otago, 1999).
were not to have to work it. The settlers themselves quickly lost any such illusions, if they had ever shared them.

The settlers' leaders dreamt of becoming the patriarchs of a cohesive religious community far from the fractious religious discord of Scotland. Both men loathed the urban industrialisation that had transformed Scotland over their lifetimes, and feared the radical disruption of social hierarchy symbolized by the French Revolution. They shared a hope that under their ship Otago might become what they believed Scotland ought to have become: a cohesive agrarian society founded on family-orientated Presbyterian small farmers. Writing to Cargill on 30 January 1847, Burns dreamt of the future cultural landscape in which his ideals would be embodied:

my prophetic eye wanders over the noble plains of Otago some generations hence to mark the future herds and flocks that cover the upland pastures far away to the ranges of the snowy mountains, whilst the lower-lying valleys are waving with the yellow corn and the pursuits of rural husbandry; the pretty farms, "the busy mile," and the happy smiling cottages by the wayside or nestling amid the trees in some bosky dingle or sylvan dell; and all this amongst a God-fearing people, with a bold peasantry, their country's pride, and an aristocracy whose highest honour it is to think that they are the disciples of Christ. But I awake; it is only a dream.

It could only ever be a dream. Utopias are seldom realised – and besides, the idealised pre-industrial arcadia Cargill and Burns sought to recreate had never actually existed. Still, given the economic and ecological odds against which the colonists struggled, and which they themselves perhaps never really grasped, it is quite remarkable how successful the European settlement they founded has been, and how close in many respects the colonists came to fulfilling their vision. This is especially so given that Burns' and Cargill's hopes that a select group of colonists could form a close community based on transforming a lush land laden with natural resources into an improved Scotland confronted reality sharply in several respects. In a nutshell, the colonists were not so carefully selected, and the land was far from a flat and fertile

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22 Ray Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration" (University of Otago, 1966), 108.
24 The Reverend Thomas Burns to Captain John Cargill, 30 January 1847. See Merrington, A Great Coloniser the Rev. Dr. Thomas Burns, 266.
plain. Moreover, Otago's severe isolation as a tiny settlement far from any viable market meant that agriculture could only buy subsistence living for the small farmer, while pastoralism could only bring wealth for a few at the price of social cohesion.

The people who agreed to leave Britain did not quite match the requirements set out by Wakefield, or the hopes of Cargill and Burns. Though Burns and Cargill conceived of the settlement as a purely Free Church settlement, its adherents were never numerically dominant, even in the case of the first ships, the *John Wickliffe* and *Phillip Laing.*[^26] The bulk of the people enticed into emigrating on the first ships were young poor couples from Scotland's industrial heartland, the villages and commercial towns between the Firth of Clyde and the Firth of Forth. Their primary motive for transplanting their households was much more prosaic than religious fervour.[^27]

Confronted with a society in the throes of brutal industrialisation, in which 'people outnumbered opportunities', most early settlers resembled the Somervilles (one of the first families to settle Andersons Bay) – railway workers who simply went to 'try our fortune in a new land'.[^28]

Many emigrants desired a return to a rural life their parents or grandparents had abandoned in Scotland.[^29] Yet for people wanting to create an agrarian idyll, astonishingly few emigrants had any experience of rural life: only twelve percent of the men on the first ships were farmers, while another forty one percent were shepherds, ploughmen or labourers. Most were largely farmers' sons or daughters unable to own or even work land at home.[^30] The rest of the men were largely tradesmen, storekeepers, or artisans.[^31] Even fewer emigrants had any capital. Of the 247 passengers on the *Phillip Laing*, for example, only 18 were wealthy enough to travel as cabin passengers, and of these five were ships' officers, and eight were part of Burns' family.[^32] Most importantly, there was far less land suitable for agriculture

[^29]: Brooking, *And Captain of Their Souls*, 118.
[^30]: Ibid., 91.
than the colonists had been led to believe, and what did exist was either swamp or clad in dense bush.

When the first ships of the Otago settlement arrived — the *John Wickliffe* on 23 March 1848, the *Phillip Laing* on 15 April, the settlers aboard gazed out with a heady mixture of exultation at the beauty of the prospect, tinged with apprehension at what might be required to transform it into something resembling the landscape of their dreams. Thomas Ferens recorded the scene, as they entered the harbour on a fine summer morning with a gentle north east breeze, guided in by Pilot Driver and his Maori crew, to be greeted by Maori and European people mingled, waving from the hills. Thomas Ferens recorded the scene from aboard the ship; it was, he wrote:

>a most delightful and picturesque domestic scenery, heights, on either, we saw the native village, on the native reserves, and further on a small village of Settlers and Whalers.'

The Cormorants, rose out of the water as we approached by thousands, land snipes, gulls, the scenery as we gained Port Chalmers, where we anchord [sic], put me in remembrance of a great part of the Cumberland scenery, the imagination fired, and here will nature [be] triumphant and bring the mind to rejoice, and adore the divine being.

Like Ferens, all the settlers were very impressed with the beauty of Otago harbour at first sight — Burns describing it as 'one uninterrupted scene of most romantic beauty'. But some were understandably concerned nature might be all too triumphant, and baulked at the prospect of transforming the steep slopes they saw as they sailed down the harbour into agricultural farmland. Burns reassured them by claiming that these were not agricultural lands. This was at best a half-truth, since although the Taieri and Molyneux Plains were always to be the settlement’s prime farmlands, most of the inner Peninsula visible from the harbour was designated as suburban or rural farmland, and was besides some of the only land accessible in the early years — Burns, who was to farm the Peninsula himself, did not even sight the Taieri until 1850. From the very beginning therefore, the reactions of the settlers mingled intense aesthetic appreciation of the beauty of the Otago Peninsula with a determination to transform what they saw into an idealised landscape of home.

34 Merrington, *A Great Coloniser the Rev. Dr. Thomas Burns*, 169-70.
7.3 Modelling the path of the righteous: Thomas Burns’ farm
The settlers’ fears that this was difficult farming country were quite justified. But it was not impossible, and Burns’ own farm ‘Grants Braes’ at Andersons Bay displayed to all that the process of recreating British farming could work on the Otago Peninsula. Burns was absolutely committed to the ideal that the settlement be founded upon agriculture, and was very wary of the lure of pastoralism that would spread his flock too far and wide for him to minister to them. In the tradition of George III, he intended his farm to drive home to his fellow settlers the practicality and desirability of a scientific agriculture that, in his estimation, improved both the land and the labourer.

The doctrine of improvement lay at the heart of both British theories of property, and Burn’s passionate belief in the need to tame the wilderness and rescue the wasteland of the Otago Peninsula. Following John Locke, it was argued property in land was only justified when its owners ‘mixed’ their labour with the land, and fulfilled God’s injunction to till and plant the soil.35 For Burns and his followers, intensive farming aimed at fully utilising all aspects of the land, and maximising production, was thus not only a progressive activity, but fulfilled a spiritual quest.

Burns however had numerous advantages over his potential neighbours. Unlike most settlers, he had extensive experience as a farmer in Scotland. He also had the luxury of buying a quantity of good land early, selecting suburban sections totalling 130 acres at Andersons Bay in July 1848.36 Burns’ choice of location was sensible. The beauty of the area, the aspect to the sun that promised fine tillage and beautiful pasture, the timber, rich land, and the bank of shells on the shore that could be burnt for lime impressed him.37 Above all he stressed the critical fact that water

36 Thomas Burns, "Diary of Reverend Thomas Burns," (Otago Early Settlers Museum, 1848-1851), Merrington, A Great Coloniser the Rev. Dr. Thomas Burns, 208.
communication across the harbour made Andersons Bay more accessible than the other suburban lands. ³⁸

Burns wanted to transplant British ‘mixed farming’—a high input, high output system that combined rearing stock, most importantly cattle for meat and dairy products, with raising cereal and fodder crops. These practices were closely integrated to generate flows of several products, and to maintain soil fertility and control weeds without the need for fallow land. A typical Scottish rotation was to begin by planting oats (in England, wheat) after the land had lain in grass for about seven years, so the grain benefited from compact soil and high nitrogen levels sustained by clover and manure. Clover was particularly critical as the key nitrogen fixing plant (providing perhaps three times the quantity of nitrogen as the pulses previously relied on), because a lack of nitrogen was the limiting factor on most crop yields. ³⁹ Lime was also used to reduce acidity, which hampers nitrogen uptake.

The adoption of new crops such as clover and turnips throughout the seventeenth and eighteenth century as part of the agricultural revolution had allowed higher stock densities, meaning more animal dung was available to restore fertility and raise yields. Manure was spread both as the animals grazed and, because the animals were typically housed indoors overnight, concentrated accumulations were collected and distributed. A crop of turnips for winter fodder was typically followed by another grain crop—often barley, which likes a looser soil—before planting a final root crop. ⁴⁰ After this crop was harvested, the ground was ploughed, and resown in grass and clover.

Fencing was (and is) absolutely critical to this system to allow property owners to design the ecology of their land, by maintaining strict divisions between different land users and uses. Thus the widespread use of quickset hawthorn hedges and much dry stone walling in Britain is linked to the spread of this system. ⁴¹ Fencing represented

³⁸ Ibid.
³⁹ Gareth Vaughan Wood, "Soil Fertility Management in Nineteenth Century New Zealand Agriculture" (PhD, University of Otago, 2003), 36.
⁴⁰ Ibid., 37-38.
⁴¹ I. G. Simmons, An Environmental History of Great Britain: From 10,000 Years Ago to the Present (Edinburgh: Edinburgh University Press, 2001), 124.
not only the improvement of land, but was the symbol of the enclosures: the bounding of the commons into private lands. The ideology of improvement, so closely tied to private property, meant that the settlers’ leaders were from the outset intent on establishing secure titles, and controlling the commons. Cargill, for example, evicted ‘squatters’ from the Dunedin Town Belt in the spring of 1850, in punishment for taking firewood from the commons.\footnote{This provoked angry letters to local newspapers, arguing, quite rightly, that firewood was too expensive for common labourers to purchase. ‘Stealing’ wood from the commons remained a widespread practice. See for example \textit{Otago News} 5 October 1850.}

The implementation of intensive mixed farming on private property was the fundamental motor of the agricultural revolution in Britain during the seventeenth and eighteenth centuries, during which the yields of key crops such as wheat increased by about 75 percent.\footnote{Wood, "Soil Fertility Management in Nineteenth Century New Zealand Agriculture", 37.} Such success drove further enclosure of lands that so altered British landscapes that, in Scotland, the result was ‘a more or less total revolution in the appearance of the landscape... In a way not found in most of England, it was geometrised by all these changes.’\footnote{Simmons, \textit{An Environmental History of Great Britain: From 10,000 Years Ago to the Present}, 129.} This was the landscape of ordered, fenced fields and ‘pretty farms’ Burns’ idyllic vision invoked for the nascent settlement. But it was founded on close controls that bounded ecological processes in time and space, determining which plants grew where and when, which animals might eat them, and when. Establishing such control in this new environment did not prove easy.

One of few settlers who had fully absorbed the new methods of ‘improvement’ fostered by the Scottish Enlightenment, Burns provided a model of Scottish farming technique. Being comparatively extremely wealthy, Burns could afford to employ several European and Maori men, and as such was the largest employer of labour in the first three years of the settlement.\footnote{Burns, "Diary of Reverend Thomas Burns.", Merrington, \textit{A Great Coloniser the Rev. Dr. Thomas Burns}, 173.} Almost all of the other settlers had to create their farms themselves, often needing to work for others as they did so. Burns’ farm was therefore established much faster than most. By the end of 1848 he had an acre fenced and the soil prepared for gardening, and had five further cleared sections fenced to keep out cattle, pigs and dogs. Over the next few years he planted a very broad range of vegetables including onions, peas, cabbages, cauliflowers, carrots,
celery, leeks, beans, and rhubarb, and crops — wheat, barley, oats, turnips and several varieties of potatoes.\textsuperscript{46} Then, after taking two or three crops, Burns laid the land in permanent pasture, and ran cattle.\textsuperscript{47}

He was intimately familiar with European farming techniques, including burning shells for lime, albeit primarily for use in cement, but also to be spread with sown grass and clover, reducing acidity and improving nitrogen uptake.\textsuperscript{48} He was not above learning from Maori, noting that they chose to plant potatoes on the summits of headlands (presumably taking advantage of the more fertile soils derived from basalt), and selecting his sections on top of the ridge with this in mind.\textsuperscript{49} When he came to plant his potatoes, Burns did so ‘Maori fashion’, often employing Maori labour.\textsuperscript{50} The land appeared as if ‘covered over with large mole hills, which, with the stumps, gives it a very colonial appearance indeed’. But the crops were good.\textsuperscript{51} Burns also explored the possibilities of local stone, opening a quarry at Andersons Bay, though it proved a failure, and the stone house he had built (possibly the first in the settlement) has not survived.\textsuperscript{52} And Burns also provided settlers with one final crucial example, by raising oats from seed he had himself brought from Scotland, and shipping them to Australia in the early 1850s, comprising the first grain exports from the settlement.\textsuperscript{53} A vision of the landscape that Burns and the settlers strove to create is seen in the surveyor John Turnbull Thomson’s depiction of a view from on or near Burns’ land at Andersons Bay in 1856 (Figure 14, below).

\textsuperscript{46} Burns, "Diary of Reverend Thomas Burns."
\textsuperscript{48} Burns, "Diary of Reverend Thomas Burns."
\textsuperscript{50} Burns, "Diary of Reverend Thomas Burns."); Merrington, \textit{Early Otago and the Genesis of Dunedin: The Letters of Reverend T. Burns}.
\textsuperscript{52} Burns, "Diary of Reverend Thomas Burns."); Merrington, \textit{A Great Coloniser the Rev. Dr. Thomas Burns}, 210. The house was built on the site where Larnach’s hostelry still stands today.
\textsuperscript{53} Merrington, \textit{A Great Coloniser the Rev. Dr. Thomas Burns}, 209.
As James Beattie has noted, Thomson’s picture of a serene and tidy town presents a highly stylised vision of how its inhabitants wished Dunedin to appear to the outside world: the town is peaceably laid out before the gaze of well-dressed sight seers, the hills have been flattened, the extent of native bush in the distance reduced, and the few native plants framing the foreground are either clean felled stumps or solitary specimens of cabbage tree or flax, seemingly retained as ornamental specimens, that emphasise the pasture swathing the hillside.  

Burns found he needed his money. To prepare his acre of garden cost him just over £55; each section cost £10 to fence; clearing and planting one acre in potatoes within a section cost him over £14. He still stood to make a profit since in the first flush of soil fertility he expected to harvest about 6 tons of potatoes per acre, and hoped to sell them at £3 to £4 a ton. But for those lacking such start up capital, farming was quite a different proposition. Writing home to his brother, Burns admitted how poor

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54 J.T Thomson, ‘Dunedin, New Zealand, from Andersons Bay 1856’ water colour, S06-458c, Hocken Collections.
55 James Beattie, "Lusting after a Lost Arcadia: European Environmental Perception in the Dunedin Area, 1840-1860" (University of Otago, 1999).
56 Burns, Early Otago and the Genesis of Dunedin: The Letters of Reverend T. Burns.
57 Ibid.
prospects were for the majority of people striving to become farmers in the new settlement. He warned that

No man who is above working for wages himself can embark as a settler in Otago without at the very least £500 in his pocket when he leaves the ship’s side, and even then he would have to set an example by working like a horse.\textsuperscript{58}

Without such a sum of money, he wrote, men would be either driven into the labour market at a disadvantage, or be forced to set out ‘as some young men are doing, with a cow or pig or goat, and flour, trusting to shoot pigeons’. He foresaw that independence could be achieved after some years in this way, but only after ‘making a desperate struggle for a livelihood in some crazy hut of tree branches and wet clay’.\textsuperscript{59} This was precisely the struggle for subsistence the great majority of the Peninsula’s early settlers faced during the 1850s as they moved out onto the land.

7.4 The dream deflating, 1850-1861

The settlement of Otago grew slowly throughout the 1850s as more immigrants arrived, still largely drawn from Scotland. English settlers initially bought more property than the Scots, but demographic weight meant Scots dominated the early settlement: 80 percent of the 12,000 odd settlers who arrived in Otago by 1860 were born in Scotland.\textsuperscript{60} Dunedin was the largest centre, but the population was actually fairly dispersed despite the desire for concentration: by the end of 1855, just over fifteen hundred Europeans lived in and around Dunedin, increasing to 2262 people by the decade’s close.\textsuperscript{61}

The settlers brought the most basic ingredients of the British mixed farming system – stock and seed for crops, grass, and hedges, and a variety of tools to clear the forest

\textsuperscript{58} Ibid. It is notable in this respect that £500 was the reserve fund brought out on the \textit{John Wickliffe} by the Otago Association. Burns’ estimate is corroborated by an 1852 report produced by the Agricultural Committee of the Otago Agricultural Association on the economics of establishing a 50 acre farm for those ‘who would employ labour at the outset to a considerable extent’. This was reproduced in the \textit{Otago Journal} No. VIII, August 1852, 115. The report argued £506 would be expended as an initial outlay, with £273 the return in the first year. Yet those very few who did arrive with such a sum, such as William Henry Cutten, quickly rose to prominence.

\textsuperscript{59} Ibid.

\textsuperscript{60} Olssen, \textit{A History of Otago}, 33-34, Ian Church, \textit{Otago's Infant Years} (Dunedin: Otago Heritage Books, 2001), 224. Church states the population of Otago as of 31 December 1860 is estimated at 12,026. \textit{Statistics of New Zealand} however gives the population of 1860 as 12,691.

\textsuperscript{61} \textit{Otago Provincial Gazette}, 56.
and work the land. But here both environmental and economic conditions were very different. The topography alone was always going to render agriculture problematic, and while neither climate nor soils were necessarily inimical to their success, both form unpredictable and complex patterns. The settlers had to learn how to orientate traditional behavioural patterns to the interactions of new seasons and different earths.

Burns’ obsessive daily recordings of weather data exemplify the settlers’ acute awareness of the need to decipher the patterns of the new environment. Burns’ data was provided to prospective immigrants in the *Otago Journal*, and published in the *Otago Witness* for established settlers. The surrounding ocean buffers the Peninsula from temperature extremes, but the influence of the El Nino Southern oscillation makes the climate changeable and particularly hard to predict. Variations in rainfall and storminess, in particular, made the timing of planting and harvesting difficult. In this respect as in many others the settlers’ best hope was to learn from Maori, and thereby discover the proxy indicators for daily weather, or good and bad growing seasons, provided by other species, such as the activity of feeding pigeons, or the timing and abundance of plants’ flowering and animals’ seasonal movements.

Similarly, settlers had no way to directly measure soil fertility. They relied upon proxy indicators such as luxuriance of vegetation. Forested land like the Peninsula tended to impress them. The size of their early yields confirmed them in the mistaken belief that the soil was extremely fertile. As late as 1894 at least one correspondent argued that “[n]othing so certainly indicates the quality of the soil in bush land as the kind of trees that predominate. The famed Otago Peninsula was chiefly covered with such trees as love warm, fertile soil, such as the broadleaf, hina hina, mapau etc. These grow only on the very best of soils.” He added that pines (podocarps, which of

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62 James Hay, *Reminiscences of Earliest Canterbury (Principally Banks Peninsula) and Its Settlers* (Christchurch: Christchurch Press Company Ltd., 1915). Hay records that settlers on Banks Peninsula learnt from Maori that pigeons were a useful proxy barometer; when they ceased feeding, wet weather was in the offing.

course also grew on the Peninsula) indicated a good soil, but that birch (which was
absent on the Peninsula) thrives on a cold, unprofitable clay. 64

Peninsula soils are in fact of medium fertility at best. Soils on hilltops and higher
slopes derived from a mixture of basalt and loess are reasonably fertile, but are still
heavy, difficult to work, and prone to moisture deficits in summer. The loess soils on
lower slopes are only moderately fertile, being somewhat acidic, with low levels of
basic nutrients, and suffer a tendency to form fragipans – dense subsoil horizons that
impede drainage and root development, and leave the soil prone to water-logging and
erosion. 65

While the settlers gradually realized this fact they found it difficult to improve the
soil. Even if they had the means, ploughing, their customary technology, could not be
applied to steep, root-entangled and stony soil. Flat land on the Peninsula is however
limited to sandy, marshy flats at Akapatiki, Okia and Allans Beach with acidic soils
that are difficult to bring into production. Easier slopes back off some of the beaches
(Te Rauone and Sandfly for example), but as we have seen in the case of Te Rauone,
are prone to sand blow when disturbed. All land had to be cleared of bush, and often a
dense layer of boulders, before working the soil could be contemplated. Before stock
could be run in conjunction with crops, fields had to be fenced. Before manure could
be gathered, byres had to be built.

The creation of every single farm on the Peninsula was thus an immense labour, and
on most farms 'mixed farming', of a subsistence sort, was for a long time a matter of
necessity – the land had to provide a varied and substantially complete diet because
farm income was so low. If the settlers' initial hope, captured so well by James Barr,
that this land would 'yield richly the fruits of this new earth, all but spontaneously to
our hands,' had been punctured, the settlers were nevertheless quite prepared to work
so that the land would bear fruit. 66

64 'Notes on Rural Topics,' Otago Witness, 6 September 1894, 6.
65 Wood, "Appraising Soil Fertility in Early Colonial New Zealand: The 'Biometric Fallacy' and
Beyond," 274-75.
The sheer struggle the first settlers experienced commenced their quest to transform the Peninsula's wild forests and wetlands into civilised, domesticated farms speaks most strongly of the strength of their belief in the inevitability of the task. To them, there was no question that this must happen if they were to thrive here.\textsuperscript{67} As Paul Shephard has noted, the link between 'improved pastoral scenery with virtue and Godliness was the most persistent theme in the written record by the New Zealand pioneer.'\textsuperscript{68} The conversion of wilderness to civilised landscape fulfilled the Biblical injunction, much quoted by the early settlers, to garden and replenish the earth so that it become more bountiful. Like many settlers, Burns' daughter Jane Bannerman had it that God had brought the settlers to the land of Deuteronomy:

\begin{quotation}

\begin{quote}
a good land, a land of brooks, of water, of fountains and depths that spring out of valleys and hills – a land of wheat and vines, and fig trees and pomegranates, a land of oil olive and honey – a land wherein thou shalt eat bread without scarceness thou shall not lack anything in it. Beware that thou forget not the Lord thy God.\textsuperscript{69}
\end{quote}
\end{quotation}

The other great barrier to recreating British farming here lay in the wider economic context. The crop rotations developed in Britain to maintain long-term soil fertility took advantage of large and easily accessible markets for a wide range of products. Here, however, local demand for some products was limited, export markets were hard to reach, and their prices unpredictable. Except for a brief period, from perhaps 1840 to 1848 when it was peripheral to Wellington, Otago was part of the Australian frontier, and Australia was far and way its most important export market. The discovery of gold in New South Wales and Victoria from 1851, and the resulting sudden increase of population, was therefore critical to the growth of Otago during the 1850s. But the Australian market was very uncertain; Otago could supply it only a limited range of goods, for which prices fluctuated wildly. As a result, farmers had little option but to focus on growing as much as possible of whatever fetched the best price, for minimum effort.\textsuperscript{70} They could not afford to consider what was best for their land.

\textsuperscript{69} Jane Bannerman, "Jane Bannerman, Reminiscences of Her Life to 1855," (Hocken Library, n.d.), 47.
\textsuperscript{70} Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 121.
For all these reasons, though many aspired to develop highly controlled mixed farming operations, farming practice in the new settlement constituted little more than a primitive fertility extraction regime for some decades. New land was cropped repeatedly until yields fell away, and it was retired to pasture, whereupon more land was cleared, and the process repeated. With so few people, and so much space, virgin land remained readily available for some time. This, in rough outline, is what occurred on the Peninsula as settlement slowly spread out from Dunedin.

During the 1850s, a very small number of European settlers gradually spread out on to the Peninsula, largely from its south-eastern fringe abutting Dunedin. By 1857, 17 registered voters owned property in Andersons Bay, and the Tomahawk Valley's first settler, James Patrick, had pushed over the hill. The only new settlement other than this during the 1850s was the arrival of a handful of European families at Portobello. The mixed Maori and European community at the Heads remained of course. Thomas Burns found 111 Maori residents there on 30 January 1849. European numbers are rather uncertain, and had probably dwindled somewhat from the 150 or so Kettle reported in 1847 after the arrival of the Scottish settlers.

This pattern of settlement reflected the critical problem Burns had identified in accessing and utilising any land off the waterfront, given the complete lack of land

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71 Simmons, *An Environmental History of Great Britain: From 10,000 Years Ago to the Present*, 292.
72 The Electoral Roll for 1857 published in the Otago Provincial Gazette names 30 voters with properties purchased on the Peninsula. Seventeen are listed as owners in Andersons Bay, three at Ocean Beach, three on the Upper Harbour, six at Portobello, and one at 'Poponui' [sic]. Some half dozen of these 30 owners did not occupy their properties at this stage however. Duckworth's list of very early settlers at Andersons Bay includes James Brown, Charles Smith, John Allen, William Duff, Thomas Robertson, Adam Begg, John Law, and the Somervilles; Thomas Granger, Edward Hurry, James Lotian, Thomas McLay, William Martin, Alexander Niddrie, Peter Peterson, John Shields, Alexander Todd, and J. and R. Twelvetree. John Anderson, for whom the Bay was named, left with his family in 1846. Duckworth describes settlement at Tomahawk beginning with James Patrick in 1857 (though Patrick is not listed on the Electoral Roll for that year) followed by Charles Smaill, Alex Henderson, Thomas Harrison, William Stewart, T. White, P. and D. Bryce, the Laings, Alex Mathieson, William Sanderson, John Kelly, M. Fraser, D. Auld, T. Robertson, R. B. Merriot, J. Sandlands, Lee 'and a few others'. See Duckworth, *The Early Years of Andersons Bay and Tomahawk*. 10-11, 52
communication by road. James Patrick's labour in carrying all of his provisions into Tomahawk on his back, and all his produce likewise before he was able to buy a bullock, and drag a sledge to and from Dunedin, was typical.75 Lacking Burns' capital, his farming acumen, and all too often his fine waterfront land, the few settlers who moved onto the Peninsula in the 1850s faced considerable difficulties. Their frustration is evident in the petition signed by 47 Peninsula residents and presented to the Provincial Council of 1860, bemoaning the disadvantage they faced because of lack of communications:

The land in our district being heavily timbered and generally of first-rate quality, would support a large and important population, produce a valuable export of grin, sawn timber, and firewood; and contribute in various ways to the general welfare and prosperity of the Province, if provided with a means of bringing its produce to market.76

The settlers were a mixture of bachelors and families. The settlers' families were typically large, sometimes including up to a dozen children, and it was imperative they construct shelter quickly.77 But though surrounded by forest, the settlers could not at first make much use of it for building. They had to cut wood, and then wait for it to season, if they wanted a house that might keep them warm.78 They coped in the interim in primitive makeshift shelters, made 'on the pattern of a Maori whare'.79 John McClay described his family's version as having no walls, just 'like the roof of an old thatch hut lifted off and set down on the ground'.80 The settlers then erected simple houses, building 'with whatever was handiest'.81 Many made 'wattle and daub' houses, with walls of saplings woven between fern tree posts, packed these with tussock, with clay plastered over the top, or lined with sheets of totara bark.82

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75 Henry Duckworth, The Early Years of Andersons Bay and Tomahawk, 2nd ed. (Dunedin: Otago Heritage Books, 1982), 52.
76 Votes and Proceedings of the Provincial Council, Session IX, 1860. Appendix, pxiii; memorial enclosed p xxiv.
77 Eileen Soper, The Otago of Our Mothers (Christchurch: Whitcombe & Tombs, 1948), 51.
78 Burns, whose dignity precluded installing his family in a grass hut, did not wait long enough – the Manse he had built for his family was floored with 'white pine' (Kahikitea), which 'shrank fearfully making the room very cold'. Soper, Otago of Our Mothers, 36
79 Soper, The Otago of Our Mothers, 35.
81 Somerville, "Reminiscences of James Somerville;" Duckworth, The Early Years of Andersons Bay and Tomahawk, 31.
82 Duckworth, The Early Years of Andersons Bay and Tomahawk, 12; Somerville, "Reminiscences of James Somerville," 30-1.
reeds tied onto manuka rafters served as roofs. Much of the wood for the early houses of Dunedin was boated to the town from the harbour shores.

Settlers had little use for the bulk of the bush regardless: as the New Zealand Journal put it, "[i]n New Zealand...timber is a weed to be eradicated". Most settlers took up bush land initially rather than fern land because it was deemed more fertile, and yielded good crops as soon as it was cleared. This perception was partly true – fern land tended to be fairly acidic – and forest soil was of course made much more fertile by burning. The settlers soon realised that burning the felled forest was 'essential to the full and immediate vigour of the soil'.

The first ground cleared around the house was planted out as a garden that was primarily the responsibility of women. These early gardens were very important in both utilitarian and emotional terms. They provided essential potatoes and other vegetables, fruit and, of great nostalgic if not utilitarian value, the familiar flowers of home. The letters and diaries of the early settlers evince a pervasive yearning for familiarity. Though they appreciated the beauty of their new surroundings, the language with which they could describe new sights, sounds and scents was wholly that of their old homes – thus the scent of bush lawyer resembled syringa, clematis and supplejack had 'white blossom like the convulvulus... the myrtle berry with its little unseen flower like white heath'. Immigrants were urged to bring out 'some haws and some Scotch thistle and a bit of heather with a root', and these new arrivals were cared for assiduously: 'Mother...gathered up hundreds of young hawthorns she had grown from pips that the boys had gathered on the road'. But, of course, once established many such introductions proved well adapted to spreading into the settlers' newly cleared land.

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83 Duckworth, *The Early Years of Andersons Bay and Tomahawk*, 12.
84 ‘Despatch from Captain Cargill to Colonel Wakefield, the principal agent of the NZC at Wellington’ Dunedin, Otago 13 June 1848 *Otago Journal* No.III., 47; Letter from James Elder Brown to his parents, April 1849, in *Otago Journal* No.5, 73-74.
85 *New Zealand Journal*, vol. 4, no.81, 18 February 1843, 47.
86 David Howden, *Otago Journal* No. VII, May 1851, 108
89 Ibid., 40-41.
Typically each settler began as a cottage farmer, with but a few ‘Colonial’ cattle, together with some sheep, ducks and hens. Most settlers also had a horse or two, some a few pigs or goats. These animals’ proportions are shown for two years at Andersons Bay in the mid 1850s (Figure 15, below).

Figure 15: Settlers’ stock at Andersons Bay 1855 and 1856

William Duff was a typical pioneer farm at Andersons Bay. By the winter of 1849, within a year of arrival, he had leased ten acres, and had two acres fenced and planted in potatoes and other vegetables. He had three cows in milk, a cow and calf, a pair of

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90 Source of data: Otago Gazette, vol.I, p24, vol.II, 83. Statistical information from the 1850s, 1860s and 1870s is especially fragmentary and frustrating, and it is seldom possible to do anything more than provide snapshots of development specific to the Peninsula. One reason for this is that as the settlement expanded the boundaries within which information was collated changed frequently. Thus, for example, these are the only two years during the 1850s for which data from Andersons Bay can be isolated. There are no records for anywhere on the Peninsula prior to 1854, but that year the returns for livestock and cultivation of Andersons Bay were lumped with those of the east side of the harbour. Between 1858 (when the returns for 1857 are provided) and 1863, Andersons Bay and the eastern harbour were lumped with other areas outside the Peninsula into a newly created ‘Eastern District’. In 1864 Andersons Bay and the Peninsula were included within ‘Dunedin Suburbs’. In 1867 the Peninsula was part of the ‘Central District’ for some statistical purposes, but for most was part of the Caversham Electoral District, within which its data is largely buried until the Census of 1878, though in both instances some data specific to the Peninsula were very sporadically recorded. Even after this point, when the Peninsula became a county from which information was consistently recorded, each census gathered slightly different data, and even where data on the same area such as crop acreages are provided over several census’, there are often changes in categories to cope with (so that one year oats are considered as one category, but in others as two, ‘oats for grain’, and ‘oats for green feed and hay’). Categories such as ‘Other crops’ are especially problematic, varying as much because of shifting definition as because of changes in land use.
geese, and nine hens. He was already earning an income by selling butter in town and caring for Burns' cows. 91

Before land was cleared, fenced, and sown with grass and fodder crops there was no way to provide concentrated feed, so all bar the cows in milk, for which a byre was built as a matter of priority, were turned into the bush to fend for themselves. 92 There they thrrove, but often joined the herds of more or less wild cattle that often congregated as far away as Sandfly Bay and Cape Saunders, from whence they could only be retrieved with great difficulty. 93 Peninsula settlers also complained that all of their roaming cattle were treated as wild, and fair game by 'sportsmen' who nevertheless took care to remove the brands on the beasts they killed. As a result the Peninsula in the late 1850s and early 1860s was 'covered with carcasses'. 94 The lack of fencing, and hence control, also meant that breeding cattle was impossible, thus most early cattle were generic 'Colonial cows' in which Shorthorn and (less frequently) Ayrshire or Hereford blood dominated. 95 Shorthorns were favoured as an all purpose animal, useful for both meat and milk.

In the first years of settlement, pigs also ran wild because many owners did not bother to construct a sty. This often caused considerable problems, as marauding swine rooted out crops and gardens. 96 The law inherited from England required crop growers to attempt to fence out stock, if they were to claim damages, but fencing was prohibitively expensive. According to one settler, this was the factor limiting crop growing, and was just one example of how, as the Otago News editor had it: 'the farmer finds his past knowledge almost useless, and all his old-fashioned ideas turned topsy-turvy by a new system of things'. 97

91 'Letter from W. Duff to W. R. Douglas, Andersons Bay, Dunedin, Otago, New Zealand, 4 May 1849' Otago Journal No.V, 74. Duff describes caring for 15 cows and heifers for a gentleman, for which he receives their produce and a third of their progeny. He sells butter at 2s per lb.
93 Duckworth, The Early Years of Andersons Bay and Tomahawk, 29, Somerville, "Reminiscences of James Somerville," 45.
94 Letters to the Editor: James Christie, Otago Witness, 17 May, 6.
95 Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 164. Burns' was the first Ayrshire bull in the settlement, landed from the Philip Laing in 1848.
96 See John Cargill, 'Letter to Editor' Otago News No. 26, 1 September 1849. Also the editorial in reply. Also Otago News No.31, 6 October 1849, 3.
97 John Cargill, 'Letter to Editor' Otago News No. 26, 1 September 1849; Editorial, Otago News, No. 27, 8 September 1849, 2.
Clearing forest for crops involved felling all the larger trees, lopping off big branches, piling as much of this vegetation as possible, and then waiting for summer and a suitable wind for a chance to burn it.\textsuperscript{1} The aim was a ‘white burn’, when all that remained was ash, but this was all too rare. As James Somerville recalled, ‘It required the wind to keep the tree tops burning’.\textsuperscript{2} Substantial logs usually remained intact, and tree stumps and root systems remained in the ground. To the frustration of the settlers these precluded ploughing and harrowing. They also rendered many of the tools settlers had brought from home effectively useless: they were not built to withstand the strain imposed by working new land, and were prone to breaking.\textsuperscript{3} Roots did however hold suddenly bared soil, a fact to which the settlers did not, perhaps, pay sufficient attention, to their almost immediate cost.

Land was thus cleared acre by acre, extremely slowly. In 1855 the Andersons Bay settlers had cleared 238 1/4 acres (208 1/5 in production, with 29 3/4 lying fallow). Over the next year they cleared only another 24 1/2 acres.\textsuperscript{4} The cumulative extent of clearing over the 1850s is most evident in Robert Gillies’ ‘Topographical Sketch of Otago Peninsula 1859’ Figure 16, below). Though not accurate to any great detail, this clearly shows the extent of forest cover on the Peninsula. It is apparent that the settlers’ had only nibbled at the forest Andersons Bay and the Tomahawk lagoons. Larger areas of forest however, had been lost behind Te Rauone Beach, and over Sandfly Bay, where the incursions of drifting sand are clearly delineated.

\textsuperscript{1} Somerville, "Reminiscences of James Somerville," 34-35.
\textsuperscript{2} Ibid., 30
\textsuperscript{3} Like many early settlers, Garrett Hopper Clearwater ‘a splendid bush man, a Great Man with an axe’ preferred American tools. He told John McLay’s father that ‘the axes and hoes from home were no good’. He advised turning the axes into grub hoes. He was right, McLay remembered, for they could then cut the roots. See H Thompson and I. Thompson, Clearwaters of New Zealand 1838-1986 (Invercargill: Sycamore Print, 1986), 4. Other settlers provided prospective emigrants with similar advice. See ‘Letter from Mr. Edward Atkinson, Otago, 31 June 1848’ Otago Journal No. III, 46.
\textsuperscript{4} Otago Gazette vol. I, 24; Otago Witness, 11 July 1856 (Supp.ement)
It is interesting to note that, at this stage of settlement, and presumably despite years of encroachment from Norwegian rats spreading down from the northern Peninsula, kiore were still to be found in numbers about Andersons Bay and Tomahawk on the southern tip of the Peninsula. Somerville recalled that ‘native rats were very plentiful where the house was built. We used to feel them running over us in the bed when we were living in the tent.’ His family caught as many as a dozen a night. But the combination of the spread of human settlement, accompanied by cats and further injections of Norwegian rats, and the burning off of the forest, soon eradicated kiore entirely from the Peninsula, as from other newly settled areas.

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5 'Topographical Sketch of Otago Peninsula 1859,’ Robert Gillies, Assistant Surveyor, SO 1324 (Dunedin: Land Information New Zealand).

6 Somerville, “Reminiscences of James Somerville,” 32

As they cleared their land, the settlers employed variations on a basic crop rotation, typically planting a cereal crop of oats or wheat, then a root crop of potatoes or turnips, and then cereals once again, before the initial high fertility of the potash-enriched soil was exhausted. These variations reflected the fact that there was no established pattern to follow; the earliest settlers were essentially conducting simultaneous experiments, though they observed each other’s results closely. James Patrick’s variation, for example, was to sow oats after felling, before sowing grass for three or four years. He then dug out the partially decayed stumps, and took another three crops of oats. Neighbouring settler James King, sowed oats with his grass, and let them stand for a few years. All settlers ended by laying down English grasses, typically Perennial, and Italian rye grass, Timothy, and white clover. Cocksfoot, though less productive, often replaced rye grass in this basic mixture on rougher ground, because it lasted longer (prior to the breeding programmes of the twentieth century ‘perennial’ rye grass did not really live up to its name) and, unlike the other grasses, maintained steady growth throughout winter. Stock were then released onto the pasture.

By the end of 1856, settlers had purchased 1062 acres in the Andersons Bay District, and fenced 336 acres of them, largely in post and rail fences using the kowhai and broadleaf trees common in the district, especially about Tomahawk. Durable kowhai (or manuka) wood was also used to replace the tool handles that wore out so soon in the labour of clearing land of trunks, roots, and stones. Two hundred and thirty six acres were in production, of which only 138 1/2 were grass, the rest being crops and gardens, in proportions shown in Figure 17 (below).

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8 For James Patrick’s variation see Otago Witness, 9 March 1878, 20. For James King see Otago Witness 3 May 1879, 4.
9 Otago Witness, 24 August 1878, 3; 9 March 1878, 20; 3 May 1879, 4. See also J.P. Huggett, ‘The Historical Geography of the Otago Peninsula’ (Victoria University, 1966), 80-81.
10 Ibid., 80.
11 Otago Witness, 11 July 1857, Supplement. See also Duckworth, The Early Years of Andersons Bay and Tomahawk, 52; Knight, Otago Peninsula: A Local History, 37.
As shown in Figure 17, the early settlers grew wheat by preference. It generally provided the highest prices locally – up to twelve shillings a bushel as compared with five shillings for oats, and eight for barley. For the few larger landholders, it was easily the most viable crop commodity to try to export to Australia. However both local and, in particular, export prices were very volatile because of the dominance of the Australian market. Periodic crop failures there meant wheat was a profitable export in some years, as in 1855, but in others, such as 1856, was unsalable in Australia, and locally fetched only nine shillings a bushel. For most small farmers, it was simply the uncertainty and high price of imported flour, and the need to make the wheaten bread settlers saw as ‘the staff of life’ that drove their determination to plant wheat. Unsurprisingly, given the Scottish extraction of most early settlers, and the reliance on horses for transport and farm work, considerable areas were also planted in oats, despite their low market price. Barley however was never grown in any quantity, despite the settlers’ fondness for beer, hence the Otago Witness frequently complained about the settlement’s resulting need to import malt.

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16 Burns, Early Otago and the Genesis of Dunedin: The Letters of Reverend T. Burns.
17 For a representative example see Otago Witness, February 20 1869, 13-14.
The struggling settlers were greatly encouraged by the fact their initial crop yields were often extremely high, though they had immense difficulty in harvesting their crops, and then in turning the grain into flour.\footnote{Harvesting was done by hand using reaping hooks, threshed with flails, and then riddled in the wind to remove the chaff. See Peter White, *Early Days of the White Family at Tomahawk*, 1-2; Duckworth *History of Andersons Bay and Tomahawk*, 14. Settlers at Andersons Bay bought a small flourmill early on, which rendered a fairly coarse whole meal flour.} James Patrick reaped 60 bushels of wheat from his first acre, and though average yields were seldom over 40 bushels, this still compared very favourably with average yields in Britain, which were only 22 bushels in 1840.\footnote{*Otago Witness*, 11 July 1857 (Supplement); *Otago Witness*, 9 March 1878, 20. See also Wood, "Soil Fertility Management in Nineteenth Century New Zealand Agriculture", 123.} One of the key reasons yields varied considerably is highlighted by Burns’ experience in 1850, when four acres of his first wheat crop yielded over 60 bushels per acre, while another eight acres were destroyed by ‘myriads of caterpillars’ of the ‘common small black butterfly’ that Burns noted ‘pay periodical visits every few years’.\footnote{Burns, *Early Otago and the Genesis of Dunedin: The Letters of Reverend T. Burns*; "Diary of Reverend Thomas Burns," September 1850; Alexander Bathgate, "On the Lepidoptera of Otago," *Transactions and Proceedings of the New Zealand Institute* 3 (1870): 138. I thank Anthony Harris of Otago Museum for this and all other insect identifications.} This episode illustrates just how much settlers had to learn: the butterfly Burns refers to is actually the day-flying magpie moth (*Nyctimera annulata*) whose larva eat only plants of the family Compositae, or the daisy family, thus it is often seen today on Cinerarias and ragwort. The caterpillars plaguing Burns (and which were also later blamed for making it almost impossible to grow barley about Oamaru, and seen by Bathgate to ‘blacken the ground’ in ‘the interior’) were probably a species of armyworm (possibly the cosmopolitan armyworm (*Mythimna seperata*)).\footnote{Bathgate, "On the Lepidoptera of Otago," 138. It is notable that Bathgate also believed that these ‘black hairy caterpillars’ were those of the magpie moth. But Bathgate has this ‘indiscriminately devour grass and herbage’, which definitively rules out this moth.}

Other insect species plagued the first settlers more personally. Before the bush was cleared, and most of the once numerous swamps and lagoons drained or filled in, both mosquitoes (*Ochlerotatus* sp.) ‘in the bush’ and sand flies (*Austrosimulium* sp.) ‘by the beaches’ were prevalent especially in summer.\footnote{Robert Gillies, "Notes on Some Changes in the Fauna of Otago," *Transactions and Proceedings of the New Zealand Institute* 10 (1878): 310, 314; Soper, *The Otago of Our Mothers*, 42.} These biting insects were a torment to settlers confined to coastal margins surrounded by bush and standing
water. Fleas were likewise prevalent, not only ‘infesting all domiciles alike’, but also spread ‘over the whole face of the country’.

Possibly the worst insect pest was the native blue bottle blowfly (*Celliphosa quadrimaculata*), which ‘swarmed everywhere’, so that

No woollen material could safely be left lying at rest for even a few minutes...A working man took off his blue serge shirt and threw it down carelessly (and every man in those days was a working man and wore a blue shirt), and in a very short time when he went to pick it up he would discover to his annoyance and disgust that it was fly-blown, and not long after he would find it crawling with maggots.

All woollen cloth had to be wrapped in calico bags when not in use, even the bed linen, though it was still rare to see blankets not ‘indelibly stained by burst eggs’.

Yet the settlers were lucky, for the native blowfly does not lay its eggs in the wool of living sheep, and cause fly-strike. If it had, sheep farming here would have been very much more difficult, and Otago might have lost easily its most critical early export commodity. The introduced European blowfly (*Calliphosa vicina*) has displaced this fly in settled areas; indeed Bathgate records that settlers themselves introduced this fly from town into the country in matchboxes ‘after it had been ascertained that they supplanted the [native] blow flies.’

Some native birds were periodically crop pests too. Parakeets were probably the worst problem for early farmers cultivating in the midst of bush, who regarded them as a menace to their precious grain crops, and to ripening fruit. They ‘had always the greatest difficulty’ in saving their crops of wheat from flocks of hundreds of red or yellow head parakeets, that defied scarecrows and, though they rose from the crops at

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gunfire, promptly settled again.\textsuperscript{123} As a result some settlers turned to bird-trapping, and were seen to ‘secure hundreds in their nets in a day in the late sixties’.\textsuperscript{124} But like Burns’ caterpillars, parakeets and other birds were generally occasional menaces, and settlers gradually came to understand and predict their behaviour. Observing one of their periodic plagues in 1878, a writer to the \textit{Otago Witness} noted ‘Naturalists have observed attentively the phenomenon that when a failure takes place in the natural feed for these birds, there is a certainty of an invasion’.\textsuperscript{125} Parakeets feed upon the seed kernels of the podocarps, totaras, and upon berries such as fuchsia, and these, especially the podocarps, are subject to considerable variations in seeding.\textsuperscript{126}

Even kaka, with a varied diet of grubs, berries, the kernels of miro berries, and honey, descended upon farmers’ homesteads in leaner seasons. James Somerville recalled that when settlers found them ‘very numerous’, they were unusually thin, and not good eating.\textsuperscript{127} In 1855 and 1856 large numbers ate turnips and grain from the fields, and the damage they caused ‘to stacks and thatched houses, tearing them open with their powerful bills, was something enormous...[s]ettlers used to discuss how they were to protect their property against this serious pest, which it was believed would increase each year as the area of grain agriculture increased.’ Yet next year kaka were gone. They returned in 1861 – but were never numerous again.\textsuperscript{128}

One reason kaka stopped plaguing settlers was that they had become an important part of early settlers’ diets.\textsuperscript{129} As Maori had long known, berry eating birds were best eaten in autumn, but because they were pests as well as a source of food, settlers shot them all year round. One ‘common recipe’ called for 14 pigeons and a kaka to make a good soup.\textsuperscript{130} Tui were also favoured eating in autumn, when they were ‘mere balls of fat’ which had to be ‘roasted off...to make them fit for pies and stews.’\textsuperscript{131} This

\begin{footnotes}
\item[125] \textit{Otago Witness}, 30 March 1878, 20.
\item[126] Renata, "The Native Birds of the Otago Peninsula Past and Present," 1, 3.
\item[129] Potts, "On the Birds of NZ (I) "; 84.
\end{footnotes}
slaughter was unsurprising, since establishing farms entailed years of subsistence living. In the early years settlers were quite unable to feed themselves on the meagre produce supplied by their handfuls of cows and small gardens, in addition to selling sufficient to gain money for essential items such as tools, seed, and clothes. Town was a long way away for most, and besides, the small settlement often ran out of critical imported supplies such as flour, and even salt, as other larger markets were much more attractive to merchants.\textsuperscript{132}

All settlers therefore had to derive a large proportion of their food for themselves from existing resources. They had to primarily engage with the environment as it existed, rather than as they wished it to become. The settlers found no shortage of food. All early records highlight the abundance of game settlers enjoyed.\textsuperscript{133} Cattle roaming the Peninsula were treated as fair game, to the displeasure of their Maori and European owners.\textsuperscript{134} Numerous bird species were eaten in large numbers, especially tui, kaka, weka, quail and pigeons of the bush birds.\textsuperscript{135} Lagoons and swamps, primarily the several small lagoons on Akapatiki Flat, and the two larger Tomahawk lagoons, provided waterfowl, primarily Paradise, grey and teal ducks.\textsuperscript{136} Settlers were gradually coming to terms with what the environment could offer them, much as Maori had before them.

\subsection*{7.5 Maori and European interaction}
Maori provided the settlers with much of this critical knowledge about which species could provide food, and when, where and how to gather them. Thomas Ferens, who spent more time with Maori in the weeks after the first settlers' arrival than any other, knew within weeks that tui had become ’very fat, round as a ball, and can be easily caught,’ while pigeon were ’exceedingly numerous, fat, and of excellent flavour.’\textsuperscript{137}

\textsuperscript{132}Soper, \textit{The Otago of Our Mothers}, 47-8.
\textsuperscript{134} Duckworth, \textit{The Early Years of Andersons Bay and Tomahawk}, 29; Bill Dacker, "He Raraka a Ka Awa," (Hocken Library, 2000), 103.
\textsuperscript{135} White, "Early Days of the White Family at Tomahawk," 30, Duckworth, \textit{The Early Years of Andersons Bay and Tomahawk}, 3.
\textsuperscript{136} Duckworth, \textit{The Early Years of Andersons Bay and Tomahawk}, 30. \textit{Otago Witness}, 13 April 1910, p89.
\textsuperscript{137} Ferens, "Transcript of Journal of Thomas Ferens on the 'John Wickcliffe'," 71-72.
Maori taught the settlers to supplement their food by baking fern root, eating fuchsia berries, and the ‘heart’ of cabbage tree leaves.\textsuperscript{138} Many fruits of environmental engagement would have been very hard won without Maori help, such as methods by which people can safely enjoy the juice of highly poisonous tutu berries, or the time at which you can eat the first fruit the young John McClay tasted in New Zealand, ‘bula bula’ berries (commonly known today as poroporo), from which his mother also made jam.\textsuperscript{139} Children, who were not too condescending to befriend and learn from Maori, passed much of this knowledge to their parents.

Maori themselves initially benefited considerably from the presence of the Scottish settlement that they had sought. They had access to a renewed market, supplying hungry settlers on arrival with fish and potatoes.\textsuperscript{140} Maori boats provided local and coastal transport (sometimes going as far as Wellington), and Maori labour helped build houses, and clear farms. In the very first years, the Scottish settlers were clearly very thankful for their presence. As one arrival on the \textit{Philip Laing} recorded in a letter home, ‘P.S. The natives are quiet, peaceful, harmless creatures. We shall probably wish we had more of them by-and-by.’\textsuperscript{141} The settlers’ early gratitude for Maori aid faded fast. By the mid-1850s, the settlers’ leaders regarded the isolated Maori with kindly condescension at best, sometimes descending into outright contempt. Cargill’s attitude is probably representative; as with most settlers, he believed the Otago Maori were ‘the mere remnant of an apparently doomed and expiring race’, and concluded there were ‘hardly enough of them left to show kindness to’.\textsuperscript{142} Not that much kindness was shown.

For Maori, access to Dunedin markets was crucial. In the first few years of settlement they sold goods, primarily fish and potatoes, from the banks of the Toito stream

\textsuperscript{138} Soper, \textit{The Otago of Our Mothers}, 48.
\textsuperscript{139} \textit{Ibid}, McClay, "Reminiscences of John McClay," 51-2. These are highly poisonous unless fully ripe. The \textit{Otago News} reprinted this reference to ‘pura pura’ from Earp’s handbook: Wild Fruits of New Zealand: “The only guide to their fitness for the purposes of eating or preserving is the experience of the natives, who know the precise time at which they should be gathered, so as to be in perfection. The pura-pura is beginning to be highly esteemed for preserving.” \textit{Otago News}, No. 44, 5 January 1849, 2-3.
\textsuperscript{142} Bill Dacker, \textit{Te Maemae Me Te Aroha} (Dunedin: University of Otago Press, 1994), 43.
(where today one finds Serpentine Avenue) as it debauched into the estuary.\textsuperscript{143} John McLay remembered

\begin{quote}
We get plenty of Baracuda [sic] and Grouper brought to Dunedin by Maori boats. These are both large fish and we often get 4 Baracuda for one shilling and a large Grouper for 1/6d...\textsuperscript{144}
\end{quote}

Maori had erected whare (‘huts in the shape of a beehive’ as McLay recalled) on Rattray Street in which to stay while selling goods at market from their landing place at the Toitu estuary. But in 1850 or 1851 the settlers, made uneasy by haka, evicted the Maori.\textsuperscript{145} ‘All was very pleased they had left for ever this place,’ remembered McLay.\textsuperscript{146}

Maori now lacked somewhere to stay when selling potatoes, fish and other commodities in Dunedin. They were reduced to using ‘their boats, oars and sails’ for shelter on the beach.\textsuperscript{147} The Maori need for shelter stemmed from the fact that, having boated their produce the length of the harbour, they often needed somewhere to stay overnight either because they still had produce to sell at market in the morning, or because the state of the tide or weather precluded returning home immediately.\textsuperscript{148} Yet, as Pakeha settlers also found, doing so in an inn or hotel made the venture pointless.

After numerous requests from Otago Maori, Mantell, Commissioner of Crown Lands in Otago from 1851 (and no friend of the Scottish settlers), had gained Governor Grey’s approval in 1853 to grant them reserves at Port Chalmers and at Princes Street.\textsuperscript{149} But Grey did not actually formally constitute the reserves, which were in any case too steep to be practicable as landing places or useful as a market. Moreover,

\begin{itemize}
  \item \textsuperscript{143} Ibid., 31.
  \item \textsuperscript{144} McLay, "Reminiscences of John McLay," 19.
  \item \textsuperscript{145} Ibid., 25.
  \item \textsuperscript{146} Ibid.
  \item \textsuperscript{147} Mantell to the colonial secretary Domett, 24 November 1852. Cited in Waitangi Tribunal, "The Ngai Tahu Report," (Wellington: 1991), 347.
  \item \textsuperscript{148} This was not always so. When the Reverend James Stack stayed at Otakou in 1852 he was boated up to Dunedin by fishermen with a freshly caught load of barracouta, and returned back to Port Chalmers with them that evening. See James Stack, \textit{More Maoriland Adventures of J. W. Stack} (Dunedin: A. H. and A. W. Reed, 1936), 16-19. However, given settlers in Broad bay and North East Harbour often had great trouble dealing with tides and weather, and were much closer to their market, this was probably an exception that proved the rule. See ‘General Road Board,’ \textit{Otago Witness}, 9 March 1867, 9.
  \item \textsuperscript{149} Tribunal, "The Ngai Tahu Report," 347-48, Dacker, \textit{Te Maemae Me Te Aroha}, 32.
\end{itemize}
Mantell told neither the Maori nor the Scots settlers of his actions (initiated in secret the very day that the Otago Association lost control over the Otago Block because they had failed to sell sufficient land to meet the terms laid down by their contract with the Crown) and placed the Maori reserve on Princes Street adjacent to the Presbyterian manse. The Otago Provincial Council only discovered Mantell’s provocative choice of a site in 1858; the settlers’ leaders then repeatedly requested that these places be returned, and in 1866 Grey (apparently unwittingly) signed his acquiescence.150 The resulting conflict created controversies that lingered as key issues in the Ngai Tahu claim before the Waitangi Tribunal.151

The Otago Provincial Council had recognised the problem in April 1855, noting the ‘urgent necessity...for the immediate erection of a suitable building...for the comfortable lodging of the natives’.152 Cargill proposed renovating a building at the Toitu estuary, but did not allocate any money towards the project.153 Macandrew’s (anti-Cargill) paper, the Otago Colonist made much of the subsequent inaction: ‘[w]e have been asked time and time again by Maori where is the house promised them’ an editorial on 17 July 1857 noted. But, ‘[m]onths and years are passing away, and we are always going to do something; let us resolve that ere another year commences we shall have actually done something.’ Maori were described as huddling under their boats at the Toitu estuary in the snows of winter, ‘frequently roused at night by vagabonds and plied with drink, for the most debasing and foul purposes’.154

Thus, in 1857, Topi Patuki and over 100 Maori petitioned Cargill for aid:

150 Dacker, Te Maemae Me Te Aroha, 38.
151 The saga that revolves around the ‘Princes Street Reserve’ is long and involved. The key points are that Walter Mantell gained Governor Grey’s approval to create the reserve in 1853, on land the Provincial Government had set aside for public uses. The Provincial Government was not informed that the reserve had been designated. Even after this was discovered in 1858, they continued to rent the sections to commercial enterprises. It does not seem that Maori actually used this reserve, as it was not suitable as a landing place. The hostelry (discussed below) is often confused with the Princes Street Reserve, but the two issues are quite clearly distinct. Conflict over Mantell’s Princes Street Reserve arose in the early 1860s after the Provincial Government sought to have the land and the rents accumulated (several thousand pounds) awarded to them. They were finally successful in 1866. Ngai Tahu took this matter to successive courts, and lost, though the Provincial Government settled regardless, paying £5000, while Taiaroa and Topi Patuki were also awarded £5000 by the central Government. The matter was still a central grievance in the Ngai Tahu Claim in the latter twentieth century however – though the loss of the hostel, in my view, was a far greater injustice. For discussion, see Tribunal, "The Ngai Tahu Report," 347-86.
152 Cited in Otago Colonist, 17 July 1857, 4-5.
153 Ibid..
154 Ibid.
We the undersigned of Otago, &c Beg that as your Servants are desiring of trading as much as possible with your White people; But having no place of accommodation in which to shelter ourselves from the inclemency of the weather Your Honour would take this into your most serious considerations; and cause to be erected some place of shelter for us out of the moneys set apart for Native purposes. 155

Nothing was done until, in 1858, Premier Stafford and his native minister visited, and inspected sites with a view to erecting a hostel. 156 The Crown then funded the construction of a two storied stone building erected in 1859 on the Toitu estuary. But negotiations with the Provincial authorities broke down without settling the terms of subsequent arrangements – and the building was on land vested in the provincial government. By 1863 the building was apparently almost buried by earthworks as Dunedin developed in the wake of the gold rushes, and the central government was forced to remove it in 1865. The building was meant to be resurrected elsewhere. This never occurred. 157 Maori had once more effectively lost access to the Dunedin market.

Burns, meanwhile, sought to improve the Maori ability to sustain themselves from their land. Stung into action by Macandrew, he led a committee whose report, presented to the Provincial Government on 9 December 1857, outlined plans to raise the Maori, ‘an interesting class, susceptible of improvement, and having the strongest claims upon our Christian sympathy’, from their ‘current degraded condition’. 158 Some of the report’s proposed solutions might have been helpful, if they had been carried out – establishing an industrial school, and providing small loans so that Maori could re-engage in fishing for the Dunedin market, or to provide improvements for tilling.

A schoolmaster, Baker, was engaged, but had no support, and resigned after three years. 159 The Society then funded the appointment of the German Lutheran

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missionary the Reverend J. F. Riemenschneider in 1862, but a year later he felt forced to resign the Society’s income also, though he carried on his mission work at Otakou till his death in 1866. The school was not opened till 1869 – when it was funded by central government.

The Presbytery report evinced the settlers’ contempt, evident in Otago Witness attacks on the Otakou Maori as ‘dirty, lazy, exacting, mean and covetous’. Maori were to be taught only in English, so as ‘to facilitate amalgamation’, and they were to adopt ‘such mode of productive cultivation as they are directed to follow’, including manuring their land, which was abhorrent to them. There was no mention of the critical problems Maori faced: their lack of land, and the lack of markets. Such concern as was shown by the Scots settlers’ leaders was intermittent, highly patronising, and totally ineffective. It did nothing to blur the reality that the Europeans no longer welcomed Maori in Dunedin.

The Maori had sufficient lands at Otakou to subsist upon, and could, albeit gradually, develop their property. Yet there was limited incentive to do so. Considered purely from an agricultural perspective, much of this was among the poorest quality land on the Peninsula. Most of it was fairly steep, and easier slopes were often very sandy. Hitherto Maori had shifted potato cultivation when fertility declined. This was no longer always viable. Most of the land was only suitable for running stock. But running stock presented difficulties too. Like the European settlers at the other end of the Peninsula, Maori let their cattle roam to find feed. Both had considerable problems with poaching from settlers who saw cattle running loose as fair game, something the Otakou people tried to remedy by placing a caution in the New Zealand Gazette 25 October 1853 ‘to people shooting or dispersing our cattle running in the district of Papanui or the Native Reserve of Otago...’ Solving this problem required fencing but, with limited capital, Maori began to be forced to lease land to Europeans. All too

161 Dacker, Te Maemae Me Te Aroha, 42.
163 Otago, "Report of the Committee of the Presbytery of Otago in the Condition of the Aboriginal and Half Caste Population."
165 Ibid., 22.
often during the nineteenth century this became the method by which Maori raised capital to meet their other needs, such as house building, and pursuing the people’s land claims.\textsuperscript{166}

Otakou Maori could ill afford to relinquish land. They had to accommodate dispossessed Maori from communities further north after Kemp’s Purchase in 1848. Kahuti and Kurukuru were allowed to occupy land at Sandymount\textsuperscript{167}. Kaikorareare’s people, who had lived at Aramoana Spit after being displaced from Canterbury by Te Rauparaha, also had to cross to Otakou after the Scottish settlers arrived. However, Kaikorareare drowned in 1852, as did too many key Kai Tahu leaders in these critical years of engagement. Thus, by 1853 only 17 of 110 people in Peninsula kaika had traditional ancestral rights to live there; the other 93 belonged to the Ngaitahu block sold in 1848.\textsuperscript{168} Nevertheless, though the accuracy of the data is perhaps open to question, the following table indicates a decline in the community at the Heads. A drop in the ratio of children to adults exacerbated the problem: from 36 children to 73 adults in Mantell’s census, to 21 children to 59 adults in Strode’s count.\textsuperscript{169} Watkin’s observation in 1840 that ‘deaths are numerous, births are few’ still held all too true.\textsuperscript{170}

<table>
<thead>
<tr>
<th>Date</th>
<th>Population</th>
<th>Source</th>
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<tbody>
<tr>
<td>1844</td>
<td>ca.160</td>
<td>Edward Shortland’s Journal</td>
</tr>
<tr>
<td>1848</td>
<td>111</td>
<td>Thomas Burns’ Diary</td>
</tr>
<tr>
<td>1852</td>
<td>108</td>
<td>Census by Walter Mantell</td>
</tr>
<tr>
<td>1861</td>
<td>80</td>
<td>Census by A. Chetham Strode</td>
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Table 2: Maori Population at Otakou 1844-1861

\textsuperscript{166} Ibid., 23.
\textsuperscript{167} Anderson, \textit{The Welcome of Strangers}, 171-2; Dacker, "He Raraka a Ka Awa," 95.
\textsuperscript{168} ‘Middle Island Native Claims (Report by Mr. Commissioner Mackay Relating to),’ \textit{Appendix to the Journals of the House of Representatives}, 1891, G-7A, 31; Dacker, "The Effects of Loss of Land at Otakou," 30.
\textsuperscript{169} There are several difficulties with this data. First, none of the counts may be accurate. Shortland’s, especially, was only an estimate, but even the careful counts of later observers may have been taken at times when people were away. In addition, there are problems with ‘Half-caste’ people, in that some counts may not have included these people. But they were few early on. Mantell’s census accounts for both, and it is notable that there are only two adult ‘Half-caste’ adults, both women, and nine children. Mantell’s census has two parts. One lists all the names of 108 people in their different villages, the other provides a population breakdown by age and gender, and counts 109 people. I have preferred the figure provided by the individual count.
\textsuperscript{170} Rev. James Watkin, "Diary of the Reverend James Watkin," (Dunedin: Hocken Library, 1840-1844). 13 March 1840. To give one graphic example: Tare Wetere Te Kahu had eighteen children. Two survived to adulthood.
Locked in a small remnant of their lands, in an economy increasingly founded on the exploitation of large land holdings, Maori were increasingly disadvantaged. As Bill Dacker concluded,

[when European labourers arrived in increasing numbers, when larger European schooners began trading, when European agriculture was established on the vast acreages available to it, the demand for Maori produce and services dropped rapidly away.]

Maori participation in the European economy stagnated. Thus whereas at the end of 1856, Maori at Otakou had 39 acres in crop, comprising 31 acres of wheat and eight acres of potatoes, by 1861 they had only increased this to 43 acres under cultivation. They had however fenced 58 acres. And whereas in 1856 they owned 41 horses, 121 cattle, 130 pigs, and a very few sheep and goats, in 1861 they had considerably fewer and less varied stock, owning only 32 horses, 87 cattle, and 70 pigs.

Europeans not only displaced Maori, they began to erase their history from the landscape. The practise of renaming the landscape, for example, was assiduously pursued by the settlers, who did not need to be told by Edward Gibbon Wakefield that ‘Names of places, too, should be changed [for] they make part of the moral atmosphere of a country’ (emphasis in original). Even prior to departure, Burns had written to Cargill arguing that the Maori names for their landscapes would have to go, since ‘Purehurehu etc are rather “long nebbit”, and would prove sort of clumsy stumbling blocks in the speech of our colonists, especially when they happened to be in a hurry—as will, no doubt, often happen, for some years to come!’ Renaming the land was an integral part of the settler project of reordering the landscape as a memory of home. Parihaumia, named to mark an association with the atua of fern root for instance, had already become Lime Burners Bay to the whalers, and was then

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171 Dacker, "He Raraka a Ka Awa," 103.
172 See Alexander Mackay, A Compendium of the Official Documents Relative to Native Affairs in the South Island, (Nelson: Government Printer, 1873), Vol. 2, 135. Also Otago Witness, 11 July 1857 (Supplement). It is peculiar that Mantell noted no cultivation or stock at Otakou whatsoever in his census of 1853. Given the documented sale of potatoes, at the very least, at this time, this suggests he did not look very hard. It also therefore throws a little doubt over the accuracy of his population figures, which show 109 people spread between ‘Takopa’, ‘Te Ruatiti’, Pukekura, and ‘Owenua’. See Hocken Collections, AG-653/172.
174 Merrington, A Great Coloniser the Rev. Dr. Thomas Burns, 132.
named Portobello by Christie, its first settler, before his departure in 1844; this name was retained, perhaps because Portobello had been Burn's vicarage in Scotland.\textsuperscript{175}

Some Maori names were of course retained, but all too often they were mangled, or misplaced, effectively becoming meaningless. More than anything, this rapid renaming reflected the fact Europeans believed they had come to an empty land, a land whose few inhabitants had no claim to a wilderness of 'waste land' they had failed to improve. Only a very few more observant Europeans such as Shortland even knew that Maori had names for all significant aspects of their landscape, and that these revealed the detailed history of their associations. Most newly arrived settlers were like the rambler who, upon visiting the 'Big stone' atop Highcliff, commented that:

\begin{quote}
had it been in the old country, there would have been no end of mythical stories about it. Some giant or hero, some Wallace, or Finn McCool...would have chucked it from Signal Hill.... But there are few myths in the colonies; we are apt rather to look at things in a purely matter of fact light.\textsuperscript{176}
\end{quote}

There were then, almost certainly, Maori myths that explained this stone's origin and place in the landscape. These are no longer remembered. Now, this stone provides a pedestal for a memorial to soldiers from the Peninsula fallen far across the globe in World War One, so it has begun to accrete histories once more.

The Europeans ought not be blamed for renaming the landscape. Such cultural colonisation is perhaps an inevitable accompaniment of settlement, part of the process of making oneself a home, and to some extent it repeated what each wave of Maori settlement had engaged in, as Kai Tahu and Kati Mamoe names gradually overlaid those of earlier peoples (though many names were retained to connect later arrivals to the people from whom they derived rights). Yet there are differences between how Maori and European's approached naming. The first is in the types of names given, which suggests something of the cultural landscape desired. Whereas Maori names often distinguished places by virtue of geographical significance, or


\textsuperscript{176} \textit{Otago Witness}, 4 March 1865, 22.
via the natural resources found there, early European place names generally bore little relationship to the environment. There are of course exceptions to this rule – the name Sandymount, for example, conveys some sense of the nature of that place, as does Harbour Cone. But many more names commemorated the settlers’ relationships with their European homeland. In a way, Cook commenced this practise by naming Cape Saunders after his admiralty patron, though Cook’s names, as Paul Carter has argued, ‘were tools of travelling rather than fruits of travel’: thus in New Zealand almost all Cook’s names are capes or bays, key markers on his journey. As Carter puts it, they ‘created a cultural space in which places might eventually be found’. The Scots settlers arrival rapidly filled that cultural space. The places they founded were often marked with names derived from home. Such names might have been placed anywhere, arbitrarily, in the sense that they bore no relation to the environment as it was. But in the sense that this place was to be the new home of Burns’ church, a name such as Portobello invokes what was to be created here. Other names, such as Andersons Bay or Macandrew Bay, more overtly claimed ownership by invoking the beginnings of their transformation by early or prominent European settlers.

The second difference is that whereas Maori names were fluid, capable of changing with events, European names, once inscribed on maps, tended to become fixed. And because they convey no sense of the nature of the place, or the activities associated with the place, these names fixity contributes to a sense that many place names on the Peninsula are ‘dead’: they convey no meaning, no sense of what sort of life is lived there.

Though they were busy naming a landscape in memory of home, even as they sought to transform it the settlers of the 1850s had been forced to engage with their environment. Because they were so few, and lacked capital, they had to learn a great deal from Maori about how to live from the land. Yet this was poised to change, for with the discovery of gold in the province in 1861, a flood of people and capital propelled rapid settlement over the Peninsula. This is almost always regarded simply

177 Carter, The Road to Botany Bay, 32.
178 Ibid.
179 When Larnach later planned the township of Portobello he took care to allocate space for each of the major church denominations.
as something that ‘saved’ the settlers’ from a much more arduous and slow struggle, and so it did to an extent. But it was not welcomed by all even at the time – neither Cargill nor Burns had any wish for their small settlement to be swamped by transient immigrants over whom they had no control. And, if gold had not been found, the European settlers might have followed a path more similar to Maori, who had been forced to adjust to the exigencies of the Peninsula environment after stripping the land of larger game. Greater value might have then been placed on elements of the existing environment, and a more equitable relationship might have developed between Maori, European, between whom the landscape might have come to have a shared, and kinder meaning.

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180 As Ian Church has pointed out to me, the Australian gold rushes, and the development of pastoralism meant that the settlement was already on a firm footing, if not flourishing.
Chapter Eight

The Axe and the Lucifer Match – expansion of settlement 1861-1880

[D]uring the last two or three years the axe and the lucifer match have been busy, cutting down and burning off; and now the whole surface is dotted with clearings, from which, at intervals, may be seen issuing heavy bodies of smoke, the result of further efforts of our hardy pioneers in turning the wilderness into fertile gardens and fields.
Anonymous, 1865

8.1 Introduction: Otago strikes gold

Though the population of the Otago settlement grew throughout the 1850s, its dependence on the outside world only increased. The settlement was living far beyond its limited means, and its balance of payments deficit became disastrous: by 1860 Otago’s small population of just over five thousand people imported goods worth £325,162, but exported goods equivalent to only £80,268. This bleak prospect changed utterly in 1861, when gold was discovered in several strikes in the Clutha catchment. People and capital flooded into Otago, drawn from all around New Zealand and Australia. By the end of that year, Otago’s population probably exceeded 30,000 and, while imports totalled £859,753, exports, largely gold dust, had risen to £849,149. Over the next decade, some £21 million worth of gold flowed from the Otago diggings, and the great bulk of this capital was distributed via Dunedin.

Dunedin’s transformation from small village into thriving commercial centre sustained the effort to create a small-farming economy on the Peninsula. The dramatic increase in capital and people – mostly men – drove a rapid expansion of settlement. Many men left the Peninsula for the diggings. Though only a few profited there, while

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181 Otago Witness, 4 March 1865, 22.
182 Otago Gazette, vol. IV, 352.
183 Ibid., The census of December 1861 returned 27,269 people, but it was estimated that this left out ‘about 3000 gold miners who were in tents in different gullies, or on the roads’. See Census of New Zealand, 1861.
most hopeful miners soon returned home empty handed, those that had done well bought more land and stock when they returned.\(^{185}\) This stimulated the initial settlements in areas such as Highcliff and Sandymount.\(^ {186}\) The real importance of gold to the fledging Peninsula communities was in providing a much larger local market for agricultural produce, and sustained higher prices, for working bullocks, horses, stock and dairy products in particular.\(^ {187}\)

With a burgeoning city to serve, the Peninsula’s population rapidly increased, reaching 1269 by 1864, and 2425 by 1881.\(^ {188}\) There were more men than women, (761 to 508 in 1864), but not in wildly disproportionate ratios because of the dominance of Scottish farming families.\(^ {189}\) Almost all land on the Peninsula had been sold by the end of the 1860s, largely in smallholdings of between 50 and 100 acres, at approximately ten shillings to £1 per acre.\(^ {190}\) By 1869 there were 199 holdings on the Peninsula of over one acre. Their proprietors had fenced off well over 6000 acres, and had cumulatively 454 acres in crops, and 3644 acres in grass or hay.\(^ {191}\) Over the next decade to 1880, this figure almost doubled so that there were then 7783 acres in grass or crop.\(^ {192}\)

Thus, by 1880, around a third of the Peninsula had been transformed into productive farmland.\(^ {193}\) Dairying was the dominant form of farming for most of the Peninsula,

\(^ {185}\) Henry Duckworth, *The Early Years of Andersons Bay and Tomahawk*, 2nd ed. (Dunedin: Otago Heritage Books, 1982), 33. Among these lucky few miners was the Te Ati Awa Maori man Raniera Erihana (better known as Dan Ellison) who took 300 ounces of gold from the Shotover in a day. Ellison’s wealth, and his marriage to Nani Weller, grand-daughter of Tairaroa and Edward Weller, cemented his family’s position as large land owners on the Peninsula. See Atholl Anderson, *The Welcome of Strangers* (Dunedin: University of Otago Press, 1998), 204.

\(^ {186}\) J.P. Huggett, "The Historical Geography of the Otago Peninsula" (Victoria University, 1966), 67.

\(^ {187}\) Duckworth, *The Early Years of Andersons Bay and Tomahawk*, 29, 33. It is interesting to note however that despite the gold rush the wheat price in Otago actually fell, from an admittedly very high price in 1860 of 9s per bushel as a result in a shortfall in Australian production, to only 7s over 1861-62, and to 6s 6d in 1863. The price of oats, on the other hand, did rise dramatically, since oats fed horses, needed to transport people and goods to the gold fields. Imported oats cost 6s 9d in 1863, more than wheat. Yet by 1865 oats sold for only 3s 9d, after American grain exports resumed at the end of the Civil War. This reveals the crucial importance of external forces on the small New Zealand market’s prices. See Gareth Vaughan Wood, "Soil Fertility Management in Nineteenth Century New Zealand Agriculture" (University of Otago, 2003), 308, 318.

\(^ {188}\) *Statistics of the Colony of New Zealand*

\(^ {189}\) *Otago Provincial Government Gazette*, vol. VIII, 150.

\(^ {190}\) Huggett, "The Historical Geography of the Otago Peninsula", 89.

\(^ {191}\) *Otago Provincial Government Gazette* vol. XIII, 72, Appendix, 167 for fencing.

\(^ {192}\) *Statistics of the Colony of New Zealand*

\(^ {193}\) In 1880 there were 6775 acres in grass (only 650 having been ploughed), and a little over 1000 acres in various crops. *Otago Witness*, 10 April 1882, 19.
though some outer areas ran sheep. This meant that the farmed landscape was increasingly dominated by sown (but rarely ploughed) grass, and the bulk of the crops—turnips, rape, carrots, mangolds, or oats as green feed and hay—were grown as winter-feed for cattle.

This chapter discusses the spread of settlement by focusing on the dairying economy and the kinds of communities and the forms of social life that developed around it; it then considers its dramatic environmental effects, and outlines evidence that some settlers were already expressing concern over their society's impacts in the 1870s. In these early worries we can discern the beginning of 'the colonisation of European minds within New Zealand, by the indigenous flora and fauna', even as the settlers were intent on removing it.  

For though about two thirds of the Peninsula remained unused in 1880, and by inference remained in bush, sand or swamp; very considerable environmental changes had nevertheless been wrought everywhere, as introduced species of plants, insects and animals flooded on to the Peninsula. In 1878, Robert Gillies (the surveyor who in 1859 had produced the first topographical map of the Peninsula) remarked:

[t]he forms of life which we see around us now in New Zealand are not the forms which peopled and clothed our hills and valleys, woods and plains, even a quarter of a century ago. The change, though rapid, and in some cases complete, has been silent and continuous, and has escaped observation...  

Settlers were, by and large too busy struggling to survive to document the minutiae of environmental change. As Gillies lamented, 'the irrecallable past is gone without the data being preserved which now we wish we had, and it only remains for us to save the shreds and patches which linger in the minds of old settlers'. But many alterations such as the incursions of many more pests and weeds affected that struggle, and these settlers paid very careful attention to, and left us records of the entwined processes of economic, environmental, and ideological change.

195 Huggett, "The Historical Geography of the Otago Peninsula", 89.
8.2 The economics and culture of farming and settlement 1861-1880

Between 1861 and 1880 settlers on the Peninsula made considerable progress. They formed small communities closely orientated around their churches and schools, and bound also by regular interaction and neighbourly assistance. The European population was still predominantly of Scottish descent, though by the end of this period almost half the European population of the Peninsula had been born in New Zealand, as the young emigrants had quickly given birth to large families.198

By 1880 many of these families had created fairly finished farms from the Peninsula’s forests. The patterns of farming they had fought to establish are clearly set out in a description given in the Otago Witness’ ‘Chats with the Farmers’ column, of ‘Lilybank’, farm of William Stewart at Tomahawk.199 William arrived at Otago in 1859 with his wife and seven children. A former grocer, he saved enough to buy 100 acres in the Tomahawk valley, intending to clear the land with his two sons, and have his daughters make butter for market.

The land, much of it hilly (only a quarter ploughable), was covered in broadleaf, totara and matai. Though William had died seven years previously, one of his sons had married another Peninsula farmer’s daughter, and by 1879, the family’s plans had reached fruition. They had cleared 80 acres, burning all the timber ‘which was then valueless’, save a little used for fencing. The correspondent was shown a felled matai ten feet in diameter – as he says, ‘an extraordinary size’. The remaining 20 acres was still in bush and ‘yearly becoming more valuable for fuel’. The family ran thirty cattle, including 16 or 17 Ayreshire cows. ‘All the work on this farm’, the correspondent comments, ‘is subservient to the production of milk’. The only other animals kept were six horses to work the land. Once the soil was broken, oats cropped for three years, before ryegrass mixed with white clover and timothy was sown. Cocksfoot replaced ryegrass on rougher ground. Each morning at 5.30, they sent

198 The census for 1878 records that 47.9 percent of European inhabitants had been born here. Scots numbered 26.1 percent, English 13.6 percent. The population was thus overwhelmingly British, and largely Scottish. Census of New Zealand 1878, 1881.
199 The following discussion of Stewart’s farm is entirely drawn from ‘Chats with the Farmers: A Visit to Lilybank, the Farm of Mr. William Stewart, Tomahawk Valley, Peninsula’ Otago Witness, 3 May 1879, p4
thirty gallons of milk to town, and had it delivered by 9, charging 4d per quart in summer and 5d in winter.

This was by all accounts an ideal farming operation. The cows had a spacious bluestone byre, and the family a comfortable brick home. A number of fruit trees had been planted, though no particular attention paid to 'planting or ornamental work of any kind.' As the correspondent put it, Mr Stewart was 'a regular Colonial farmer, who has had a hard battle to fight, and he has got over the brunt of it very bravely.' All over the Peninsula this pattern was being repeated, though perhaps rarely so successfully, since Stewart had the advantage of proximity to town, a relatively large acreage, and good land.

In all, by 1880 around a third of the Peninsula was productive farmland, but many of the more established farmers had cleared the bulk of their holdings, which were typically small farms of between 50 and 100 acres.
In 1878 holdings of over one acre totalled 17,533 acres (some 69 percent of Peninsula County’s 24,016 acres). As is evident in Figure 18 (above), the vast majority of holdings were smaller than 100 acres.

In 1878 a cadastral map depicting the pattern of property titles created on the Peninsula was produced (Figure 19 below). It displays the fact that almost all of the European land on the Peninsula had now been broken down into property parcels in line with the founders’ intentions. Kettle’s original divisions of suburban lands into ten acre parcels had been extended around Tomahawk and Andersons Bay, while the bulk of the rural lands were now parcels of approximately 50 acres. The surveys that had created these titles were performed in the early 1860s, in consequence of the sudden demand for land around Dunedin that arose in the wake of the gold rush. Only some land above Seal Point and the slopes ascending from Broad Bay remained in larger parcels – both steep and difficult to access. The latter parcel formed the core of Larnach’s estate, and Larnach expended enormous sums of taxpayer funds to create the road that opened up his land.

The parcels of land on the Peninsula still faithfully mirrored a founding premise of the Scottish settlement that land ought to be allocated as the private property of yeoman small farmers. This ideal of the small farmer who owned and farmed his own land was rapidly assuming a wider ideological role throughout colonial New Zealand that it is yet to wholly relinquish. The independent small farmer epitomised the rough and ready social equality the settlers valorised, in opposition to the gulf between the great estate owners and tenant farmers of Britain. The surveying of the Peninsula thus reflects the hope that the social and economic fabric of the Peninsula communities would fulfil a dream of a sturdy, economically and socially independent citizenry of family farmers efficiently improving their properties.

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200 Huggett, "The Historical Geography of the Otago Peninsula", 124, 49.
201 For extended discussions of the importance of yeoman small farming as an ideological trope, and as a powerful political force in nineteenth century New Zealand, see the works of Tom Brooking, especially Tom Brooking, "Use It or Lose It: Unravelling the Land Debate in Nineteenth-Century New Zealand " New Zealand Journal of History 30, no. 2 (1996), Tom Brooking, Lands for the People? The Highland Clearances and the Colonisation of New Zealand: A Biography of John McKenzie (Dunedin: University of Otago Press, 1996). Also Brooking, T. ‘Yeotopia’, unpublished ms (copy in the authors possession). Rollo Arnold’s works also develop similar themes.
Figure 19: Survey Districts of North Harbour and Blueskin, North East Valley, Upper East, Otago Peninsula, Andersons Bay, Tomahawk, Portobello Road, [Detail], 1878.
By the 1870s, many farmers had cleared the bulk of their land, the necessary first ‘improvement’, and now faced the issue of what their property should ideally produce to sustain them. The answer, for almost all, was dairy farming. Only in outlying areas where land was cheaper (though generally poorer and steeper) and where some farmers had larger holdings, were sheep preferred, while a few landholders on the harbour fringes about Andersons Bay and Portobello became market gardeners. These choices were largely determined by the small size of most holdings, which precluded running sufficient sheep to be economic, and the prevalence of terrain too steep for the plough.¹ Dairying or market gardening was however made possible by relative proximity to Dunedin and Port Chalmers.

Developing communications with the city and its markets was absolutely critical. Throughout the remainder of the nineteenth century Peninsula residents directed an almost continuous stream of querulous complaint to local newspapers about the state of roads, paucity of ferries, and lack of rail. From 1876 onwards, the Otago Peninsula and Portobello road boards had unrivalled importance as mediators of local politics in the area.

Though it might seem Peninsula residents were never satisfied, there was steady progress in the period 1861 to 1880. The road to Andersons Bay and extending towards Tomahawk was completed and metalled by the winter of 1860; this allowed wheeled traffic to reach Dunedin from Tomahawk for the first time.² But during the 1860s the roads remained primitive; Figure 20 (below) beautifully highlights the incongruously long skirts of a European women negotiating the muddy track round the harbour margin to Andersons Bay, and about to attempt the ramshackle ‘Waverley’ bridge (from which the suburb derived its name).³

¹ By 1875 the agricultural correspondent from Portobello and Broad Bay noted his districts ‘are almost exclusively engaged in the production of dairy commodities...This restricted production is caused by the nature of the land, which is very hilly, and in some places so steep as to be altogether unsuitable for tillage’. ‘The Crops, their Condition and Extent: Portobello and Broad Bay’ Otago Witness, 20 February 1875.
² Otago Witness, 6 August 1859 3; Otago Witness, 26 May 1860, 5.
The poor roads meant that only a few settlers like William Stewart were close enough to Dunedin for their milk to be delivered each morning by cart. Those further out had to make their milk into butter, and send it to town each week. Therefore, as we have seen, early communities still predictably clustered around nodes of communication – at Andersons Bay and Tomahawk, closest to Dunedin, and at Portobello, accessible by boat from Port Chalmers.

The life of Samuel Gill after his arrival at Portobello in the 1860s illustrates the spread of settlement and its relationship to the gradual development of communications. He lived in a tent between 1863 and 1865 while clearing his own land and taking contracts to fell bush, and ‘grub’ flax. He recalled that ‘there were then in Portobello no roads, no horses and no carts...neither were there butchers, bakers or grocers. We had to live a good deal on bread a week old and salt meat’. Gill gained a waterman’s license to carry passengers and from 1865 took people and

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205 Andrew Hamilton, Dunedin from the track to Anderson’s Bay, 282 x 480 mm, watercolour, Neg. #928, Hocken Collections
206 William Stewart was one such early farmer in the Tomahawk valley. His milk was carted from his farm at 5.30 each morning, arrived in town by 7 a.m., and was distributed by 9 a.m. See ‘Chats with the Farmers: A Visit to Lilybank, the Farm of Mr. William Stewart, Tomahawk Valley, Peninsula’ Otago Witness, 3 May 1879, p4
produce (‘butter, eggs, fruit, poultry, pork, veal and vegetables’) to Port Chalmers once a week for 20 years. 208

As Gill’s experience suggests, water communication remained crucial; throughout the 1860s and 1870s it was more important to the Peninsula economy than land transport. Watercraft provided the critical connections for freight and passengers between the small bays strung along the Harbour side, and linked them to both Port Chalmers and Dunedin. All of the Harbour settlements had a jetty that allowed the passenger craft and ferries plying the harbour to serve them. 209 Ferry services on the Harbour had commenced in 1859 with small steamers such as Pride of the Yarra (also briefly known as the New Era) and the Victoria. 210 The Pride of the Yarra started ferry services to the Peninsula, initially running down from Dunedin to Portobello along the eastern channel that then followed the Peninsula water front, over to Port Chalmers, and back to Dunedin up the western channel each morning, before running the same route in reverse in the afternoon. 211

The Victoria initiated another activity that came to have some importance to the Peninsula, advertising its first excursion to the Heads on Christmas Day 1859; over 150 people turned up for that first occasion, and such events remained perennially popular summer outings for Dunedin citizens throughout the nineteenth century. 212 None of these small steamers lasted long however, establishing another pattern that continued throughout the nineteenth century: the Pride of the Yarra sank after colliding with another ferry, the Favourite, in 1863, in what is still the Harbour’s worst maritime accident, and the Victoria was driven out of business by a flotilla of larger vessels that arrived to take advantage of increased flows of people and goods in the wake of the gold rush. 213 Most of these short-lived ferries ran directly up and

208 Ibid.
211 McCluskey, Down the Bay: The History of the Ferries on Otago Harbour, 15.
212 Ibid., 20.
213 For the ferries operating in the Harbour that served the Peninsula during this period either regularly or for occasional excursions see Ibid., 17, 20, 24-26, 29-31, 38-40, 43-47, 51-53, 59-71.
down the western channel between Port Chalmers and Dunedin, however some did take the longer eastern route along the Peninsula bays, and more ran excursions to the Heads in the summer season. Another important route linked the southern suburbs Waverley and Andersons Bay directly to Dunedin.214

In 1863 the first publicly-listed ferry company, the Peninsula Steam Boat Company was founded ‘to establish a regular daily steam communication between East Harbour Peninsula (Otago Peninsula) and Port Chalmers’.215 They built the Peninsula, a paddle steamer, which ran twice daily from Port Chalmers to Dunedin, and on Tuesdays and Fridays included Portobello on its route. Fierce competition from Johnny Jones’ Harbour Steam Company however soon killed the new company; Jones purchased the Peninsula — but abandoned service to its namesake.216

Although numerous ferries then ran occasional excursions to the Peninsula through the remainder of the 1860s, regular service to the Peninsula was not resumed until the mid 1870s. Several ferries then began new services; the Golden Age ran between the Peninsula bays and Dunedin twice a week a for few years from 1875, while from 1876 the Portobello was the first to provide what became a very important service for Portobello residents, connecting Portobello residents to the Saturday evening train from Port Chalmers to Dunedin; from 1878 to 1881 this was a regular service running back and forth to Port Chalmers four times daily on a timetable designed to connect commuters with trains to Dunedin.217 Ferry transport to and from the suburban outliers also increased with the expansion of the 1870s. In an effort to promote settlement at Waverley Larnach launched the Colleen which was to run between there and Dunedin eight times daily; but despite offering free travel to those who bought

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214 The Lady Barkly ran five shilling return sightseeing trips to Harington Point in 1862-63; the Bruce ran special excursions over Christmas and New Year to the Heads in 1864-65, and again in 1868; the Lady Bowen took passengers and freight between Dunedin and Taiaroa Heads via Portobello between 1870 and 1874; the Golden Age had run excursions throughout the 1860s, and from 1875 ran between the Peninsula bays, Port Chalmers and Dunedin twice weekly; the Jane carried passengers and cargo between Portobello and Port Chalmers from 1874, and from 1875 extended her daily run to include Dunedin. She also ran summer excursions to the Heads during 1879-80. See Ibid., 24-26, 29-31,49-50, 59-60.
215 Ibid., 51.
216 Ibid., 51-53.
217 Ibid., 61-63.
sections from himself and Smith, another land speculator in the area, the sections sold too slowly, the ferry proved unwieldy, and the run was soon discontinued. 218

The ferries brought the Peninsula into much closer contact with Dunedin and Port Chalmers. They were especially valuable for transporting freight goods, for which purpose the roads were effectively useless, especially along the harbour edge. But they could not entirely substitute for reliable land transport, and improving the roads remained the key priority that dominated Peninsula politics throughout these decades.

The principal land access was initially along the ‘Main Road’ running up from Andersons Bay through Highcliff and on to Portobello, but it remained in very poor condition until the 1870s. 219 In fact, until the 1870s Andersons Bay was the terminus of organised land transport; the path further on was merely a bridle track. 220 Settlers along the harbour at Macandrew Bay and Broad Bay had to boat their goods to market, and this placed them at an immense disadvantage; to ensure they reached Dunedin in time for Saturday’s market many had to leave the night before and bad weather might trap them in town for days, so that any potential profit was squandered on food and lodging. 221 The settlers demanded a better road to connect the bays; as James Sim, who owned land on the slopes running from Highcliff down to Macandrew Bay but who could not yet make a living from it asked in 1867: ‘[w]hat were they to do with their land, if they had not the Beach road, when there was a railway bringing produce from the Clutha in two or three hours?’ 222

As the burgeoning rail network cut transport time and freight costs for communities elsewhere throughout Otago, the Peninsula became dangerously isolated. It urgently required much better roads to connect it to Dunedin. The bay road along the harbour side was especially crucial. Like many other large projects undertaken in Dunedin in the 1870s and 1880s, it was constructed by prison labour. Maori prisoners, either exiled to Dunedin in the wake of the Taranaki Land Wars or, later, the evicted and

218 Ibid., 69-71.
219 Huggett, “The Historical Geography of the Otago Peninsula”, 69.
220 Ibid.; ‘General Road Board,’ Otago Witness, 8 June 1867, 13.
221 ‘General Road Board,’ Otago Witness, 9 March 1867, 9.
exiled Parihaka people, did much of the construction work.\textsuperscript{223} The causeway across Andersons Bay from ‘Cutten’s Corner’ to Vauxhall Corner was completed by 1872; soon after the road was opened as far as Macandrew Bay.\textsuperscript{224} The road connected Portobello to Dunedin by 1878.\textsuperscript{225} It was during the 1870s too that the ‘High Road’ through Highcliff and down to Portobello was greatly improved, and was ‘well macadamised’ by 1878.\textsuperscript{226}

The new roads had an immediate impact; Gill recalled that when the bay road was completed a mail coach began operating, and about 30 of the farmers bought horses and spring carts, causing the steam boats to lose business, and leave.\textsuperscript{227} Horse-drawn buses were soon in operation also.\textsuperscript{228} These improvements facilitated the development of the seaside settlements at North East Harbour (now Macandrew Bay), Company Bay, and Broad Bay and stimulated a great deal of speculative subdivision on the harbour front at Portobello, a characteristic of the buoyant economy of the 1870s.\textsuperscript{229}

\textsuperscript{223} For discussion of the work of Maori prisoners while in Dunedin and the Peninsula especially in the 1870s see Jane Reeves, "Maori Prisoners in Dunedin 1869-1872 and 1879-1881" (University of Otago, 1989), 13-14, 44-49, 61-62, 74. Seventy four Ngati Ruanui prisoners sentenced to three (or in 12 cases seven) years penal servitude in the wake of the Taranaki Land War were shipped here in 1869, and worked until 1872. In 1879 137 more prisoners, the followers of Te Whiti, were exiled here and worked on the construction of the bay road and its sea walls around Portobello, on the High Road, and at Fort Taiaroa until 1882. The Maori prisoners were not, as has been said, kept in caves at Andersons Bay (these caves housed explosives). They were kept at the Dunedin gaol or, if working too far away to return each night, in a prison hulk that was towed from site to site as required. The Otago Provincial Council recorded that the Maori prisoners spent 1870 labour days on the Andersons Bay road, 1762 on the Vauxhall Road, and 119 on Harbour works. It is difficult to ascertain quite where the Parihaka prisoners were made to work, since they were not differentiated from the European prison labour. All that can be said with certainty is that Parihaka prisoners, including Maori, worked on the bay roads, since this is recorded in the Portobello Road Board Minutes and, occasionally, the \textit{Otago Witness}. Close and lasting relationships developed between the prisoners and the Otakou Maori.

\textsuperscript{224} Ibid., 14; ‘Andersons Bay Road,’ \textit{Otago Witness}, 6 July 1872, 16.

\textsuperscript{225} Hardwicke Knight, \textit{Otago Peninsula: A Local History} (Broad Bay, Dunedin: Self-published, 1979), 47-48, 52.

\textsuperscript{227} Gill, ‘A Trip to the Peninsula (From Our Travelling Reporter),’ \textit{Otago Witness}, 10 August 1878, 6.

\textsuperscript{228} Huggett, "The Historical Geography of the Otago Peninsula," 68-69.

\textsuperscript{229} During the 1870s the Provincial Government or entrepreneurs such as Larnach created six small ‘townships’ (on paper at least) by subdividing sections on the waterfront in the Portobello and Broad Bay area and selling them at auction: Seatoun, Portobello, Lamlash, Dunoon, Oban, and Granton. All together they comprised 502 quarter acre sections on the harbour. The speculative nature of the purchases is revealed by the fact that, all together, 92 people bought land at auction, but four fifths of these lived outside the Portobello area, and very many such absentee owners soon sold their land. These figures are taken from a useful discussion of the development of the Portobello community, see Karina Hogg, "Newlands a New Home: The Development of a Community at Portobello 1848-1882" (Bachelor of Arts Dissertation, University of Otago, 1991), 18-37 especially. A correspondent to the \textit{Otago Witness} acridly remarked that ‘From the very high prices obtained for the sections in the townships of Dunoon and Oban it is very probable that they were bought by persons who sooner or later intend residing on them.’ See ‘Broad Bay,’ \textit{Otago Witness}, 10 March 1877, 7. Gill recalled that ten acres at what became Lamlash had been on sale for years at £10 per acre, and sold in the ‘land
Perhaps the most ambitious project of all generated by the enthusiasm of the 1870s was the proposal by several Peninsula settlers, Larnach prominent among them, to construct a railway line along the harbour to Portobello. The privately funded line reached Andersons Bay in 1878 – and there construction halted, due to disagreements amongst the settlers over where the line should run and, more importantly, the economic downturn of 1878.230

The new roads opened up the land to farming. James Sim, for example, who had worked as a wool sorter while building his family a two-storied house using timber felled as he gradually cleared his 65 acres of bush clad land, was able to start farming at Highcliff fulltime from 1877.231 Writing as ‘Pakeha’, Peter Thomson’s column ‘Rambles Round Dunedin’ in the Otago Witness describes a series of visits to parts of the Peninsula in these decades that depict the progress of settlement in relation to improving transport. Thus in 1864 he walked out to the Peninsula, with the intention of reaching Sandfly Bay by way of crossing from Andersons Bay to Tomahawk, and skirting the cliffs of Highcliff. He was thwarted however by thick bush, with only occasional clearings, and but a slight track. Six years later, he was easily able to reach his destination, taking a horse-drawn bus to the top of the hill above Andersons Bay, and walking formed roads to look down into Sandfly Bay.232 Similarly, in 1869 five years after a previous excursion he took advantage of the advent of ferries up the harbour from Dunedin to revisit Portobello in 1869; he was

very much pleased and surprised to see the progress made by the settlers in the way of clearing the land and making roads. Instead of the muddy narrow bush track, through which it was difficult to make any but the slowest progress, there is now a series of well cut and well formed roads, with tolerably easy grades, opening up the district in all directions. And what was then a tract of almost impenetrable bush, with only a few small clearings, has been cut into right and left, and farm houses and all their accompaniments, and fields of heavy-looking grain crop, now stud the landscape.233

boom’ for £1100. The ‘boom’ faded fast; Gill records a ‘land boom company’ buying Seatoun at £80 an acre, and trying to sell quarter acre sections for £50. Within a few years they were sold for £5. See Gill, "Farming at Portobello," 12; Knight, Otago Peninsula: A Local History, 120.

230 Knight, Otago Peninsula: A Local History, 45, 123-24; Otago Witness, 2 January 1875, 13.

231 "Sim Family History and Account Book."


The extent of the development of farming in the wake of the roads is evident in agricultural statistics. Though limited, the data available still clearly show the development of dairying. Figure 21 (below) shows that cattle heavily dominated stock numbers, especially in 1866-67, and more than half of these cattle would have been cows in milk. Most farmers' herds averaged around 20 milk cows, with five to ten replacement heifers, and sometimes a bull. Stocking density was therefore around one head of cattle per 2-3 acres of grass.\footnote{Huggett, "The Historical Geography of the Otago Peninsula", 93. These estimates are confirmed by the figures given in ‘Chats with the Farmers’, which generally suggests half to two thirds of the cattle were cows in milk.}

![Otago Peninsula Livestock 1866-67 and 1877-78](image)

**Figure 21: Otago Peninsula Livestock 1866-67 and 1877-78**\footnote{Otago Provincial Government Gazette, vol. XIII; Statistics of the Colony of New Zealand}

Most farmers now favoured Ayreshire cattle,\footnote{See Ray Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration" (University of Otago, 1966), 357. The series ‘Chats with the Farmers’ which ran in the Otago Witness provides invaluable insights into the operations of several Peninsula farmers, especially those in Tomahawk. James Patrick, Alexander Mathieson, William Stewart, James King (all of Tomahawk), John Mathieson (Highcliff), and Richard Irving (Broad Bay) all discussed the history and development of their farms in the 1870s. By this stage, Alexander Mathieson, John Mathieson, Richard} for reasons encapsulated by these verses from Joan White, from Mihiwaka (across the Harbour):
If dairy farming be your aim,  
And if your land is steep,  
You'll find the Ayrshire cows the best  
In all respects to keep.

Being light of frame they give more milk,  
And thrive upon less feed  
Than Durhams, Jerseys, Alderneys,  
Or any other breed.  

A few pigs (about three) were typically kept as an adjunct to dairy farming and fed on the skim milk discarded in the process of making butter. Pigs were generally fattened for domestic consumption rather than sold. Most farmers also kept poultry to supplement food supplies or provide some eggs for sale. Sheep numbers had grown relative to cattle by 1877-78, but only about twenty farmers actually carried sheep, and some of these were primarily dairy farmers who resorted to sheep on land too poor to run cows. A very few farmers with larger holdings in remote and difficult country around Mt. Charles and in Sandfly Bay did specialize in sheep. Finally, every farmer kept a few horses as draught animals and for light farm work, as well as perhaps riding hacks.

Horses were central to colonial life, especially prior to the spread of rail from the 1870s. Without horses to carry people and pull the plough farms could not function. Their importance generated the demand for oats, as explained by Murray Rose:

[to grow oats you needed horses. If you had horses you needed oats to feed the horses to grow the oats to sell to the cities to feed the horses of others. This was a vicious cycle that impoverished the soil, making it only suitable for browntop and biddy-bid.  

Irving and John King all ran colonial cows crossed with Ayrshire bulls, while William Stewart disposed of his colonial cows and ran pure Ayrshires. A few farmers preferred pure Shorthorns.


Huggett, "The Historical Geography of the Otago Peninsula", 92, 157.

Ibid., 92-93.

Ibid., 157.

Ibid., 157.

Ibid., 162.

Peninsula farmers largely fed their working horses on green feed oats, oaten hay, and grass hay. In 1866 there were 164 horses and 231 acres of oats on the Peninsula; in 1877 there were 696 horses, 442 acres of oats, and 226 acres of hay. Though no precise data are available it is safe to say that horses consumed the bulk of the Peninsula oats crop, as well as much of the hay, and many farmers, especially those still establishing their land, would have had to buy feed.

Dairying required considerable investment in infrastructure. In winter, cows had to be housed overnight in byres, butter production necessitated a dairy, feed and equipment required a barn, horses a stable, and pigs piggeries. Thus each dairy farm had a predictable group of out buildings, built to fairly standard patterns, largely using local materials. Barns built in the 1870s for example were generally simple timber frames clad in vertical weatherboards with iron roofs. In the 1870s much of this timber came from Dunedin. Around Tomahawk and Highcliff local stone was available, and some of the farmers there were reasonably well off. They often invested in stone outbuildings. Perhaps the most prominent and exceptional example is Alexander Mathieson’s steading built in the late 1870s, and still owned and inhabited by his descendants today. His imposing stone byre could house at least 70 cows in comfort, and featured several notable improvements, such as direct feeding of the cows from lofts above the stalls, a tramway down the centre to carry steamed food from the boiler, a dung truck to gather manure, and conduits carrying liquid manure to storage tanks. Dairies were built in stone wherever possible, given the need to keep the milk and butter at an even cool temperature.

The types of fencing varied according to the environment. The majority of the early fences were wooden, either expedient piles of logs left on the land after burning, or more expensive but durable post-and-rail fences; the posts were generally durable

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243 'Peninsula County,' 23 February 1884, 9; 'Harvest Prospects,' *Otago Witness*, 10 February 1898, 14.
244 Huggett, "The Historical Geography of the Otago Peninsula", 92-93. On William Grey’s farm, in Milburn, 20 acres of oats were required to feed a working team of four, two hackneys, a brood mare and four colts. ‘Farm and Station: The Farm Competition, Mr William Grey’s Farm, Milburn,’ *Otago Witness*, 11 October 1894, 6. It appears therefore that at least two acres worth of oats was required per horse.
245 Huggett, "The Historical Geography of the Otago Peninsula", 93-94.
246 Ibid., 94.
247 Ibid., 95; Otagonian, ‘Rambles in the Peninsula,’ *Otago Witness*, 1 April 1882; Knight, *Otago Peninsula: A Local History*, 49.
broadleaf or kowhai, and the rails (usually two or three, but sometimes more, as on Larnach’s estates where up to five rails were used) also of kowhai.\textsuperscript{248} Early writers regarded all wooden fences as temporary however, expecting they would be replaced by live fences or stonewalls, as used in Britain.\textsuperscript{249} To the settlers such fences were symbolic testament to the civilised landscape of improved and efficient farming they sought to recreate on the Peninsula. For a period live fences of either gorse or hawthorn were common, especially about Tomahawk, Andersons Bay and Macandrew Bay.\textsuperscript{250} But settlers soon discovered these presented problems, being extremely difficult to control. Dry stone walls were the most permanent solutions, and therefore perhaps the most powerful symbols of improvement, and this helped justify the particularly arduous and painstaking work required in their construction. They were also, of course, a practical and useful solution to the question of what to do with the enormous numbers of stones Peninsula farmers often had to cope with as they slowly cleared their land for the plough. This was a slow and expensive process. Richard Irving, for example, farming in Broad Bay, was forced to grub several acres over with picks; each acre took three weeks to clear at a cost of £50.\textsuperscript{251}


\textsuperscript{249} Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 279-80.

\textsuperscript{250} This is evident in the District Valuation Rolls 1897, when these fence types still commonly existed there. It is presumed they were survivors of earlier planting, because of the ubiquity of wire fencing by that time.

\textsuperscript{251} ‘Chats with the Farmers: A Visit to Mr. Richard Irving’s Farm, Johnston Lea, Peninsula,’ \textit{Otago Witness}, 1 February 1879.
Fencing’s purpose is to partition land and thereby divide and control its use, separating cropping and grazing areas, and private and public property. But it also marks divisions in attitudes that shaped land use, and hence ecology. The boundary between a farmer’s fields and the public road side is insubstantial — permeable — to all but its maker’s mind and hence the animals it is designed to enclose or exclude. It is the contrasting attitudes that the fence demarcates, as much as the fact that the fence encloses stock, that mean it so sharply divides very different communities of plants and animals. At Alexander Stuart’s farm ‘Clifton’ they ploughed, in the old Scottish fashion, right up to the bases of the stone walls: inside the fence, farmers dictated, as far as possible, what lived upon every square inch. They were much less concerned with the roadsides outside, and there a much more diverse and novel mingling of native and exotic plants occurred.  

Figure 22 displays the limited quantities of crops grown in this period, reflecting the increasing pre-eminence of dairying. Formerly several crops were taken from newly cleared land; by the early 1870s most cleared land was immediately sown in  

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253 For an American parallel see William Cronon, Changes in the Land, 130-38.
permanent pasture and only occasionally were only one or two crops, generally of oats and potatoes.\textsuperscript{254} As more land was cleared a steady increase in the ratio of acres in grass to crops occurred: in 1869 it was 8:1, in 1881, it was 10.9:1.\textsuperscript{255} The grasses sown remained much as they been in the 1850s, dominated by rye grasses, timothy, and white clover, with cocksfoot often replacing ryegrass on rougher ground.\textsuperscript{256} There were many variations on this basic theme. John Mathieson, for example, added a little cow grass and cocksfoot into a generic mixture, but regretted the addition of cocksfoot, which overgrew the rye grass, and formed coarse and unpalatable tufts. His brother Alexander only used rye grass, cocksfoot and clover.\textsuperscript{257}

During the 1870s grain growing on the Peninsula fell away. Other areas such as the Taieri plain, and land throughout North Otago were now growing vast amounts of wheat for export and the small Peninsula farmers could no longer compete.\textsuperscript{258} Wheat production virtually ceased in Andersons Bay in the early 1870s; by 1871 it was ‘inconsiderable, consisting of only a few patches’.\textsuperscript{259} The little that was grown was fed to poultry or made into flour for home use.\textsuperscript{260} It lingered longer about Portobello, where 80 acres were in wheat in 1870, but drought and bush fires in 1872 meant that only 20 acres were planted, and by 1877 there also it was ‘but little cultivated’.\textsuperscript{261} Barley was never grown in quantity on the Peninsula; even in 1870 only 40 acres were sown around Portobello, while no more than ten acres were ever grown in Andersons Bay and Tomahawk.\textsuperscript{262}

\textsuperscript{255} Huggett, ‘The Historical Geography of the Otago Peninsula”, 91.
\textsuperscript{256} This is the description given by Mr. William Stewart who farmed at Tomahawk. See ‘Chats with the Farmers: A Visit to Lilybank, the Farm of Mr. William Stewart, Tomahawk Valley, Peninsula,’ \textit{Otago Witness} 3 May 1879.
\textsuperscript{257} See ‘Chats with the Farmers: A Visit to Springfield, the Farm of Mr. John Mathieson, Peninsula,’ \textit{Otago Witness} 24 August 1878; ‘Chats with the Farmers: A Visit to the Farm of Mr. Alexander Mathieson, Tomahawk, Peninsula,’ \textit{Otago Witness} 9 March 1878.
\textsuperscript{258} Vaughn Wood provides an excellent discussion of wheat growing in Otago through the nineteenth century. See Wood, “Soil Fertility Management in Nineteenth Century New Zealand Agriculture”.
\textsuperscript{259} ‘The Crops, their Condition and Extent: Andersons Bay’ \textit{Otago Witness}, 4 March 1871.
\textsuperscript{262} ‘The Crops, their Condition and Extent: Andersons Bay’ \textit{Otago Witness}, 4 March 1871.
Most crops were grown as winter feed for cattle, thus turnips, and crops such as carrots, mangolds, rape and beet (listed in the above figure as ‘Other crop’ in 1878) steadily increased in acreage during the 1870s; this trend continued until the end of the century. Turnips and carrots were especially favoured for they did not flavour the milk.²⁶³ By the 1870s, only oats and potatoes were cash crops, but even they were of limited importance. Though some potatoes were sold in Dunedin, the bulk of the crop was for local consumption.²⁶⁴ And, while some of the oats crop was threshed for grain, oats were more commonly grown for green feed and hay.²⁶⁵

High yields of grain were still gained. The reports from the ‘Portobello and Broad Bay’ and ‘Andersons Bay and Tomahawk’ correspondents in the Otago Witness annual report ‘The Crops, their Condition and Extent’ between 1869 to 1877 record yields never lower than 35 bushels for any grain. In a good year such as 1876, when there were frequent showers through spring and summer alternating with hot, dry spells, oats yields reached 90 bushels in places, and averaged 60.²⁶⁶ But low prices and growing competition meant there was still no viable market for crops from the Peninsula, and farmers persisted in not growing them, as shown in Figure 23 (below).
Statistics and descriptions of transient visits mask the fact that, for most settlers, especially those only just establishing their properties on necessarily more remote, isolated, and usually poorer land, life was little easier.

Walter Riddell’s diary of 1865 to 1871 provides the most detailed account we have of the continued struggle poorer farmers had for subsistence in those early years. Riddell and his family arrived in Otago in 1862, buying land at Sandymount in 1864, an area that was then almost completely untouched. It took ten days for the family to carry their meagre possessions a mile from the end of the road through the bush to their property. The family’s arduous life in the years that followed is illustrated by

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267 Lest it be thought his is an extreme case, it must be stressed that Riddell was an extremely capable man, who turned his hand to a great variety of work. He almost single handedly built numerous buildings, including the church at Pukehiki. He later became Larnach’s foreman, and manager of the Taieri and Peninsula Milk Supply Company.

268 Walter Riddell, "Walter Riddell’s Diary," (McNab New Zealand Collection, n.d.). 28 March 1865 Alexander Stuart, another pioneer Peninsula farmer of the 1860s, lists the sorts of tools that were a settlers’ basic equipment. In 1863 he spent almost £8 on an axe, adze, cross cut saw, hand saws, a hammer, iron rings, wedges, a spirit level, tape line, oil stone, spade, iron bucket, pick, a spoke shave,
comparing the hopeful tone of Riddell's New Year's entry for 1866 with his despondent reflections in 1871:

Jan 1st 1866: Was a fine day. I put up a bail for the cow & and then strolled through the bush for the rest of the day. I am entering another year with £83 debt on my head, with plenty of hard work before me, and if God grant me my health I will be a clear man in another year. I have increased in the year that has passed a house, an acre of land cleared, 15 hens, 2 cows and a son.

Jan 7th 1871: Another New Year has arrived and I am still in existence, lonely & single handed to battle with the toil of getting bread for my family. Things are a great deal lower this year than ever they were, still hard up for money. We have 8 cows this year and can't keep going.269

As these entries indicate, like most of his fellows, Riddell sought to establish a dairy farm. But while pioneer farmers like Riddell regarded their few cows as the primary source of future income, their farming was still quite diverse: as in the 1850s, many kept poultry, perhaps a few pigs, sheep or goats, while growing vegetables and fruit. Indeed a few made extensive efforts to develop vegetable and fruit growing. Alexander Stuart, for example, had been head gardener for the Duke of Buccleugh, and after arriving at Dunedin and buying 130 acres for £441 in 1863, commenced farming; besides accumulating the usual mixture of stock he planted the full range of garden vegetables, including numerous varieties of potatoes, cabbages, cauliflowers, lettuces, carrots, and peas, as well as asparagus, beans, parsnips, leeks, celery, and spinach.270 He later became a leading dairy farmer. Others such as Clark who farmed at Hoopers Inlet grew a lot of fruit, including besides the obvious apples, pears, and plums, peaches and other stone fruit.271

But while land was gradually cleared, grassed, and stocked, alternative means of support had to be found. Riddell's various employment demonstrates the different sorts of industry being explored upon the Peninsula. His diary details contract work for wealthier farmers such as the leading settler John Mathieson of 'Springfield Farm', at Highcliff, for whom he sawed 12,000 feet of timber between 9 September 1865 and 29 January 1866, a task he found particularly arduous given a lack of good files, and spare adze and axe handles. See Alexander Stuart Diary and recipe book pages Hocken Library, Misc-MS-0607.

269 Ibid.


timber trees.\textsuperscript{272} He also undertook to clear and fence 10 acres of bush for £75.\textsuperscript{273} Riddell worked for James MacDonald too, who pioneered burning limestone on the Peninsula. Beginning in 1865, MacDonald erected three lime kilns near Sandymount that exploited a band of limestone some one kilometre wide and 20 to 30 metres deep that spans the Peninsula between Seal Point and Dowling Bay.\textsuperscript{274} Though the caustic lime produced was not suitable for agriculture, and was used for making cement (and possibly as a road metal), these kilns initially provided invaluable employment for several men.\textsuperscript{275} In 1882 they were reported as abandoned, having been eclipsed by quarries with better access to transport.\textsuperscript{276} They were periodically reopened subsequently however, and finally ceased operation in 1939.\textsuperscript{277}

Riddell was also a skilled craftsman, erecting farm buildings for several neighbours, as well as the church at Pukehiki.\textsuperscript{278} Growing recognition of his talent saw him gain several years work from prominent financier and politician William Larnach. From the 1860s as better transport gradually opened up the Peninsula several leading citizens either lived or had summer houses built on the Peninsula. Of these, William Larnach was by far the most important, providing the Peninsula settlers with a significant economic boost. Larnach arrived in 1867 as chief colonial manager of the Bank of Otago, but quickly built a large and diverse commercial empire as ‘a floater, promoter and director in very many companies’.\textsuperscript{279} One of these, ‘Guthrie and Larnach’s New Zealand Timber and Woodware Factories Company Limited. Ironmongers, Hardware Merchants and Sawmillers’ became the largest trading

\textsuperscript{272}Riddell, "Walter Riddell's Diary," 9, 30 September 1865.
\textsuperscript{273}Ibid., 5 August 1865.
\textsuperscript{274}Huggett, "The Historical Geography of the Otago Peninsula", 109-11, Knight, Otago Peninsula: A Local History, 84. When Peter Thomson visited in 1870 McDonald stated he produced 150 bags per day, or double that if necessary. See ‘Rambles Round Dunedin: Portobello–Harbour Cone–Peninsula Lime Works,’ Otago Witness, 9 April 1870, 8.
\textsuperscript{275}Huggett, "The Historical Geography of the Otago Peninsula", 110. The burnt lime was too caustic for agricultural use.
\textsuperscript{276}‘Rural Rambles: Peninsula,’ Otago Witness, 25 November 1882, 27.
\textsuperscript{277}McDonald switched the primary focus of his lime industry to Milburn. He was still reported as using Peninsula ‘hydraulic lime’ as an ingredient in his cement works in 1887. However in 1888 he declared bankruptcy. See ‘Our Industries. Mr McDonald’s Cement Works,’ Otago Witness, 18 March 1887, 14; ‘Creditors meeting,’ Otago Witness, 18 May 1888, 17. Others then took over the Peninsula kilns. Alex McTainsh, whose grandfather Peter McTainsh worked under Macdonald, recorded that John Riddell (son of Walter) worked the kilns in the early years on the twentieth century (‘about 1906’). See Alex McTainsh, “Otago Daily Times: Letter, 1974, from Alex E. McTainsh,” (Hocken Library, 1974).
\textsuperscript{278}Riddell, "Walter Riddell's Diary."
\textsuperscript{279}Fleur Snedden, King of the Castle: A Biography of William Larnach (Auckland: David Bateman, 1997), 146.
company in Australasia in the 1870s. Larnach epitomised the enthusiasm and optimism of the 1870s, his finest years. In 1870 he bought 100 acres at Sandymount. Though the area was largely bush covered, this was the last unsold land in the district. Larnach rapidly bought much more land to form his own estate (some 1000 acres). Here he built the grandiose mansion popularly known as Larnach's Castle, and developed a large farm of just over 1000 acres.

The state of the farm was a source of great personal pride to Larnach. Indeed, much as Burns had in the 1850s, Larnach provided a model of progressive farming for other settlers to emulate. His primary form of farming was dairying, and his herd of stud Alderney cattle were much sought after, as was Larnach himself as a judge at Agricultural and Pastoral shows. He was president of the Otago Peninsula Agricultural Society, and helped generate the impetus for its annual shows that commenced in 1879. He ran a very self-sufficient property, growing large quantities of fruit and vegetables, raising pigs, poultry, and indulging his especial love of draught and bloodstock carriage horses. In some respects, such as the composting of the solids from his servants' human waste, and the use of the methane to light his chandeliers, he was well ahead of his time. He built some of the dry stonewalls himself, and meticulously supervised construction of wire fencing (some of the first used here). He planted extensive areas in native and exotic trees and shrubs for shelter and ornament.

Larnach drove development on the Peninsula in other ways. As a Member of Parliament he helped develop roads (though those his horses drove upon were favoured); he constructed hotels on the high road and the beach road to accommodate those for whom the journey between Dunedin and his home was too far to travel in a

280 Ibid., 72.
281 Otago Witness, 12 October 1888, 15. Larnach recalled that he bid five guineas an acre for his initial holding at auction, whereupon a settler said 'Let him have it, for a goat cannot get to it.'
282 Snedden, King of the Castle: A Biography of William Larnach, 77, 132-34. Snedden states Larnach had 410 hectares, or 1013 acres.
283 Snedden's statement that Larnach was the first dairy farmer on the Peninsula is patently false. Numerous settlers, as previous chapters indicate, could claim that honour in advance of Larnach, though none on anything like his scale. Ibid., 85.
284 Ibid., 77, 84-85.
285 'Otago Peninsula Agricultural Society,' Otago Witness, 1 January 1879, 4.
286 Snedden, King of the Castle: A Biography of William Larnach, 79.
287 Ibid., 85.
day\textsuperscript{288}; he was responsible for subdividing both Portobello and Waverley, and built a ferry, the \textit{Colleen}, to encourage land sales for the latter.\textsuperscript{289} He spent extremely lavishly and largely employed local labour, as many as twenty locals gaining a living in his employ.\textsuperscript{290} From 1871 Riddell worked largely for Larnach, becoming foreman of works.\textsuperscript{291}

Thus Riddell slowly prospered – but was able to spend only about a quarter of his time on his own farm.\textsuperscript{292} It therefore took him nine weeks, even with eleven days of labour from neighbours, to clear one acre.\textsuperscript{293} His eventual rise to become manager of the Taieri and Peninsula Milk Supply Company is testament to his intelligence, skill, and appetite for hard work.

Riddell’s diary indicates how heavily each farmer relied on the help of his neighbours for help to clear, plough, plant and harvest, and cover shortages in feed or stock. This is also evident in the development of James Sim’s farm ‘Pinkieburn’ which ran down the slope from Highcliff to Macandrew Bay. His farm accounts for 1877, when he first began full time farming, until 1881, are probably typical of how small farmers made their modest living. Sim’s primary source of income was butter, supplemented by selling a range of products, including eggs, potatoes, chaff, pork, fattened pigs, grazing, and by 1881 small amounts of wheat and oats.\textsuperscript{294} Sim’s butter was churned twice weekly by rotary horse-power, and sold in Dunedin to ‘Irvine and Stevenson’, leading grocers in the city. But many other exchanges were with neighbours, such as James Macandrew, John Mathieson, and Cochrane Weir, to cover shortfalls in grazing and feed, or enlarge herds of cattle and pigs.\textsuperscript{295}

\textsuperscript{288} Ibid., 87, 132-34.
\textsuperscript{289} This ferry was poorly designed however, and proved a failure. This greatly hampered the development of Waverley; section prices fell 25 percent when she was taken out of service, and irate purchasers demanded the difference in value be refunded. See McCluskey, \textit{Down the Bay: The History of the Ferries on Otago Harbour}, 134; \textit{Otago Witness}, 17 February 1872, 15.
\textsuperscript{290} There have been numerous estimates of the expense of the estate. The cost of the Castle alone has been estimated at £125,000. See Knight, \textit{Otago Peninsula: A Local History}, 83. But as Snedden points out, these are all highly speculative.
\textsuperscript{291} Ibid, Snedden, \textit{King of the Castle: A Biography of William Larnach}, 79.
\textsuperscript{292} Huggett, “The Historical Geography of the Otago Peninsula”, 85-7.
\textsuperscript{293} Riddell, “Walter Riddell's Diary,” 11 May 1866.
\textsuperscript{294} “Sim Family History and Account Book.”
\textsuperscript{295} Ibid.
In 1879 Sim hosted the first ‘Peninsula Agricultural and Pastoral Society show, attended by 600 people. As the *Otago Daily Times* reported after the second show, ‘[t]he Society do not pretend to much. Their object being merely to bring together the local stock, and afford the settlers a yearly opportunity of coming together to compare notes. Looked at from this point of view, the show may be called thoroughly successful.’

This success in gathering the Peninsula communities together around a collective celebration of farming goods and produce is evident in the picture of the show.

![Figure 24: Otago Peninsula Agricultural and Pastoral Show in Sim's Paddock](image)

This success was testimony to the fact that several tight-knit communities had formed on the Peninsula, highlighted by extensive inter-marriage between families. Though communities formed where communication with the outside world was easiest, and though people did seek to be involved in the affairs of the wider world, each community was also inward-looking, centred in a life structured by communal work,

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296 ‘Peninsula Agricultural and Pastoral Society,’ *Otago Daily Times*, 8 January 1880.
297 Otago Peninsula Agricultural and Pastoral Show in Sim's Paddock, Hardwicke Knight Collection (held privately).
school and church attendance. As Rollo Arnold has argued, the rhythms of these communities were ordered by both natural and economic cycles (and, bar Sundays, the occasional Sale Day, and New Year there were no holidays). Weekly life was orientated around the Saturday market and church on Sunday. Community events throughout the year were orientated around the full moon, so that travel in the evening was possible.

The seasonal growth cycles of their plants and animals determined the settlers' labour patterns throughout the year; they calved cows, sowed oats, grass, and root crops through spring, milked cows, cut hay and harvested grains, potatoes and fodder crops through summer and autumn, then ploughed in winter and early spring to prepare the ground for the next round of crops. The summer harvest when crops had to be gathered quickly at their peak was the critical time during which labour was most in demand.

As transport eased and communities formed, different industries were investigated, and alternative modes of production became available. These demonstrate the experimental nature of nineteenth century settlement, as settlers explored possibilities for alternative products. Several local farmers became shareholders in the short-lived 'Hoopers Inlet Gold Mining Company' that tried to exploit a small seam of gold-bearing quartz on the lower slopes of Harbour Cone, before finding the gold was too finely dispersed for mining to be economic. One farmer, William Robertson tried diversifying by milling flax at Sandfly Bay, damming a small creek to drive his
millwheel.\textsuperscript{302} The Dickson family operated a small timber mill at Hoopers Inlet, building a tramway across the inlet to transport their timber.\textsuperscript{303} But all these attempts at industry either failed or remained small-scale family affairs.

The Peninsula became increasingly popular as a place to visit for pleasure and recreation. The keen and longstanding interest shown in such pursuits is highlighted by the establishment of Vauxhall gardens above Andersons Bay in 1862 by Henry Farley, exploiting the newfound wealth generated by gold.

![Figure 25: W.F.E. Liardet, 'Andersons Bay 1865'.\textsuperscript{304}](image)

The Vauxhall gardens were extensive and expensive, costing as much as £10,000 to establish. Farley bought 23 acres at Andersons Bay, had a jetty constructed, built a hotel, baths, summer houses, sports grounds, swings and round-a-bouts for children, and a rotunda for bands to play during summer evening dances.\textsuperscript{305} This last structure is evident in the large clearing amidst the bush in the left of Liardet’s lithograph (Figure 25, above). The significance of the jetty is clear from the variety and number of watercraft also shown in Liardet’s lithograph; several ferries and smaller watercraft

\textsuperscript{302} Huggett, "The Historical Geography of the Otago Peninsula", 111-12; Knight, \textit{Otago Peninsula: A Local History}, 130.

\textsuperscript{303} Knight, \textit{Otago Peninsula: A Local History}, 70.

\textsuperscript{304} W.F.E Liardet, Vauxhall Gardens, Otago, 142 x 319 mm, S07-135hl, lithograph, Hocken Collections

\textsuperscript{305} Knight, \textit{Otago Peninsula}, 45.
specifically served the trade to the Gardens in the early 1860s. After the gold rush petered out, the venture ceased to be economic and no takers were found when it was auctioned in 1870. Brick making began on the land instead.

As the roads improved, more of the harbour front of the Peninsula became devoted to servicing sightseers and tourists. In 1878 a correspondent from Broad Bay noted that 'Harvest here consists chiefly in letting houses or apartments profitably to the summer visitors, who begin to arrive, if the season is good, early in December, and by the end of the month accommodation of any kind is at a premium.' This generated increased summer ferry traffic at the decade’s end; a steamer Jane was briefly devoted to running from Dunedin to Portobello via Macandrew and Broad Bays, together with ‘Steam Boat Excursions’ to the Maori Kaik and Taiaroa Heads on Sundays and Public Holidays. The result was that, despite Broad Bay being ‘admirably suited’ to agriculture, ‘[o]f ordinary harvest work there is very little done here; the settlers “go in” for dairy produce or market gardening.’

Other important developments revolved around progressive shifts in dairy production. Prompted by a drop in the price of butter, a group of eight dairy farmers in the Highcliff area formed a co-operative, and in the spring of 1871 established the ‘Otago Peninsula Cheese Factory’, the first of its kind in New Zealand. The factory was built on the large central location of John Mathieson’s farm. Almost 10,000 lbs of cheese was produced in the first year of operation. It was sold in Dunedin, and

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306 These included the Nugget (Farley’s own ferry); the Lady of the Lake (which ran hourly from 11 a.m. until 4 p.m., and from 7 p.m. to midnight on gala evenings between 1864 and 1865); the Golden Age (in the summer months) the Minerva (briefly in 1864); and the Iron Age. In 1864 Farley also advertised that ‘Farley’s Line of Red Flag whale boats’ would run to the Gardens every quarter hour from 6 a.m. See McCluskey, Down the Bay: The History of the Ferries on Otago Harbour.

307 Knight, Otago Peninsula: A Local History, 45.
308 ‘Broad Bay,’ Otago Witness, 10 March 1877, 7.
309 McCluskey, Down the Bay: The History of the Ferries on Otago Harbour, 59. In 1881 however the Jane was removed from this popular service to be converted into a gold dredge on the Clutha.
311 Ltd, "Minute Book of the Otago Peninsula Cheese Factory Co. Ltd."
enjoyed a good reputation. However, cheese prices were not high (they varied between 11d and 5d per pound, typically at the lower end of that range), and profits were meagre.312 Despite this, other farmers were encouraged to join, and production at its peak reached at least seven and a half tons of cheese, made between October and March over the peak of the milking season.313 Though the company never thrived, farmers were encouraged to form another factory on the same principle in 1877 in the Harbour Cone area. This was burnt down however in 1881 in a large bush fire (discussed in detail subsequently).314 The Pioneer cheese factory meanwhile shifted to Pukehiki, near the church, after John Mathieson’s withdrawal when he made an ill-fated effort to switch to sheep farming. Valiant efforts were made to find a more profitable market, and cheeses were sent to several destinations in Australia in 1880 and 1881.315 But in 1884 it was resolved to close the factory. The Peninsula farmers’ efforts were hampered of course by the ‘Long Depression’ that had set in towards the end of the 1870s, and which would not end until well into the 1890s.

In sum, European settlement on the Peninsula flourished over these decades. By 1880 the best land was being intensively and progressively farmed, as exemplified by Larnach’s holdings, and the institution of novel cooperative methods of production such as the cheese factories. The settlers had also managed to overcome the transport problems that had threatened to marginalise them. And, more than almost any other area, the Peninsula was still dominated by the people and ideals on which the Otago settlement had been founded: it was largely Scottish Free Church small farming families who had shaped the culture and economy of all the Peninsula communities. This presented a stark contrast to the situation further down the Peninsula at Otakou.

8.3 The Maori economy 1861-1880

In 1867 the Illustrated New Zealander described the Otakou Maori as cultivating enough land to grow their own vegetables and grain, rearing pigs and poultry ‘to a considerable extent’ but, the article continued, their ‘principal avocation’ was fishing

312 Ibid.
313 Huggett, "The Historical Geography of the Otago Peninsula", 108-09.
314 Ibid., 106-07; Knight, Otago Peninsula: A Local History, 60-62.
315 "Minute Book of the Otago Peninsula Cheese Factory Co. Ltd."
for barracouta, supplying not only themselves but the Dunedin market. The Otakou Maori were clearly coping better than most other Ngai Tahu communities with the transition to a new economy, able to support themselves comfortably, if not generate much capital (they were described by the *Otago Witness* in 1872 as 'seldom rewarded by success for the hardships they endured' bringing fish to market).

Nevertheless, many Maori at Otakou were struggling to cope with a radically altered economy. There are few statistics available for the period between 1861 and 1880, but it is nevertheless clear that economic conditions were difficult. Gathering food in the traditional way by travelling to their mahinga kai was becoming difficult as European settlement foreclosed access or destroyed traditional resources. Emulating settler farming, and developing their remaining land to produce food for home consumption or sale at market, was possible, but isolation and inexperience were formidable obstacles. The most practical way to earn money was to work for wages (either in a settled occupation or, more commonly, at a variety of seasonal work such as shearing or harvesting). Some activities combined aspects of all of these options — fishing was possible for both food and trade, and while it could be continued all year round, was still much more profitable in summer. However, all these alternatives were difficult in the face of economic and environmental transformation.

Maori access to their key mahinga kai was increasingly foreclosed by European settlement and ownership of land. Drainage of key lakes such as Tatewai on the Taieri had begun by the 1860s. Annual weka hunts on the Maniototo for example were halted by European refusal to allow Maori access, and by 1880 the weka there had been exterminated, poisoned by bait set for rabbits. In many other cases traditional foods simply disappeared, such as with the disappearance of lagoons and wetlands on Akapatiki Flat as they were ploughed and drained, or the destruction of *ti kouka* groves.

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317 *Otago Witness*, 16 November 1872.
320 Ibid., 36.
Maori did retain access to sea fisheries, which Europeans did not constrain with property rights. And, unlike Europeans, who tended to complain that a fine site for a township and surrounding farms was going to waste at Otago, Maori clearly believed that the sea around the Otago Peninsula, rather than the land, still held most promise as the basis for a viable economy at Otakou. There were several ways the sea could provide, for besides gathering seafood for subsistence and sale, Maori also wished to operate shipping transport. But the small one-masted schooners they had operated in the 1840s as an integral part of coastal trading were all wrecked (the fate of the Perseverance, owned first by Tuhawaiki and inherited after his death by Karetai, wrecked when she dragged her anchor in a storm at Otago Heads in 1847). Replacing them cost up to £200, a sum now beyond the means of almost all Maori. During the 1850s Karetai wrote repeated unsuccessful letters to the government asking for a schooner or steamer. Competition from larger European vessels would have hampered Maori participation in coastal trading regardless.

Yet Maori had advantages, especially hard won expertise on how, where and when fish could be caught, while Europeans were utterly ignorant of the habits and locations of local fishing grounds. Barracouta in particular remained a viable food product for market. An abundance of fish and steady demand from Dunedin meant it was possible (but not easy) to make a living from fishing the waters surrounding the Otago Peninsula during the 1860s and 1870s. As we have seen, Maori had supplied the settlers with fish in the 1850s. The gold rush opened a larger market that Maori surely hoped to profit by supplying. In December 1863 Maori from Otakou landed 'an enormous quantity' of crayfish in Dunedin. They tried hawking the live animals door to door, but despite being sold 'remarkable cheap...something like a shilling a dozen', Maori struggled to find buyers amongst the squeamish settlers, and so sold to the shops. But this brief success was possibly a result of a temporary absence of European fishermen, many of whom had joined the gold rush. For Europeans began commercial fishing in numbers during the 1860s, and gradually came to a

321 Johnson, *Hooked*, 34.
323 Johnson, *Hooked: The Story of the New Zealand Fishing Industry*, 22. In 1864 Peter Thomson reported that crayfish used to be sold for six to 12 shillings a dozen, depending on their size. See *Otago Witness*, 29 October 1864, 19.
324 *Otago Witness*, 11 September 1863, 5 reported the complaint that fish had been scarce in the market for several weeks as a result of fishermen leaving to seek gold.
better understanding of the habits of local fish—probably in large part by gleaning from Maori on the Peninsula such crucial information as where reefs for hapuka could be encountered, and the seasonal habits of fish such as barracouta. Peter Thomson, for example, who in 1862 as we have seen lived amongst the Maori at the Heads briefly, warned his readers in the *Otago Witness* of 29 October 1864 that he had ‘noticed the Goai [Kowhai] in blossom – a sure sign that we may look for the baraccouta [sic] in a day or two’ and, ‘sure enough’, noted their arrival as forecast.

During the 1860s Europeans established two different fisheries in the waters around the Peninsula. Small boats crewed by two men caught fish such as flounder, red cod and yellow-eyed mullet (often referred to as herring) by seine netting the tidal waters within Otago Harbour. In 1869, 11 boats and almost 30 fishermen netted in the harbour; by 1878 this had increased to 16 boats and 40 men. Larger whaling boats usually crewed by three men ventured outside the harbour, often making for the coastal fisheries off Cape Saunders to catch hapuka, blue cod, and trevally.

Maori had more than sufficient knowledge and skill to compete in these fisheries, but were disadvantaged by a lack of capital and their location so distant from the market, which was besides always fairly small and effectively seasonal. In the new economic system, the crucial location was not the fishery, but the market, and Maori were at the wrong end of the Harbour in this respect.

The market was initially constrained by the settlers’ conservatism – they imported quantities of canned, salted or dried fish from ‘Home’. Once settlers were convinced local fresh fish were palatable, the principal problem was in providing a regular and reliable supply to the storekeepers and merchants who supplied the public. The lack of a fish market, the weather, and the seasonal movements of fish often

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325 In evidence to the Waitangi Tribunal, Ngai Tahu produced ‘marks’ books dating to the mid nineteenth century, which showed how offshore reefs could be located even several miles offshore by locating the intersection of lines ‘drawn’ in the mind’s eye from landmarks. See Waitangi Tribunal, *The Ngai Tahu Sea Fisheries Report*, Wellington: Legislation Direct, 45.
326 *Peter Thomson, Otago Witness*, 29 October 1864, 19.
327 AJHR, ‘Further Papers Relative to the Fisheries of the Colony’, D15, 1869.
328 AJHR, ‘Further Papers Relative to the Fisheries of the Colony’, D15, 1869.
made this problematic. Over winter, stormy weather, and the offshore migration of species such as hapuka and barracouta, meant that only red cod and flounder were regularly available in Dunedin shops, and even then, there were some days every month without any fish at all.\textsuperscript{330}

Maori continued to fish for food, and there are a few references to continued trading activity in the 1860s, but it is clear that Pakeha based in Port Chalmers dominated the fishing trade from the 1860s on. Port Chalmers was connected to Dunedin by road, and from the mid 1870s rail too, and was the regions principal port. It, and not isolated Otakou, was the obvious base for fishermen needing to bring fresh fish to market as quickly as possible, and ship cured (smoked) fish elsewhere.

Experienced Pakeha fishermen seem to have begun operating in numbers in the wake of the gold rush. Richard Lewis began fishing the outer coast in 1862.\textsuperscript{331} George Wiseman commenced seine netting the harbour that year also.\textsuperscript{332} These men had sufficient success that in 1868 an attempt to trawl off Otago coasts was made. This proved that there were plenty of fish to be caught, and though the venture failed due to lack of onshore infrastructure, it sparked political interest in the state of, and prospects for, the colonial fisheries. The resulting Fisheries Commission report of 1869 details how fishing in Otago had progressed now that Dunedin provided a much more substantial local market. Around 60 to 70 men then fished around the Peninsula, catching some £5000 to £6000 worth of fish each year (about £75 income each per year, less expenses).\textsuperscript{333} About half the men worked seine netting inside the harbour, typically for flounder, red cod, and yellow-eyed mullet (\textit{Aldrichetta forsteri}), though a few guard-fish (\textit{Scomberoides iphais}), trevally (\textit{Caranx lutescens}), and whiting (\textit{Micromesistus australis}) were also caught). When the weather was poor, these


\textsuperscript{332} ‘Further Papers Relative to the Fisheries of the Colony’ \textit{Appendices to the Journals of the House of Representatives}, 1869, D15.

\textsuperscript{333} ‘New Zealand Fisheries,’ \textit{Otago Witness}, 22 April 1871, 1.
fishermen turned to crayfish (*Jasus lalandei*). Outside the Heads, especially about Cape Saunders, larger whale boats and cutters, with three man crews, used hook and line to catch groper, red cod, ling, barracouta, and less frequently, blue cod, moki (*Latridopsis ciliaris*) and trumpeter (*Latris lineata*). Working outside the protection of the harbour was much more dangerous, and the fishermen had to be very careful about when they ventured beyond the Heads, for once on the outer coast there was no surety that shelter from stormy weather could be found.

As we have seen, the Otakou communities had long provided agricultural and seafood products for market. But their capacity for agricultural production in competition with Europeans elsewhere was limited. Their land was poor, difficult to cultivate, and distant from market. Initially they did make an effort to do so. Murray Thomson recalled that his father Peter resettled Kelvin Grove in 1862, leasing the land from Korako for £14 annually, and planning to ‘combine there a bit of farming and a fishing speculation’. Thomson found a crop of wheat growing on the land, apparently sprouted from a ‘very badly’ harvested crop taken by the Maori the previous year. Maori practice with potatoes was to leave some in the soil to provide the next crop; it seems plausible they were simply applying the same method here. After Thomson had cut this wheat, the Maori claimed it, on the grounds that they had sown it. Thomson refused them, and promptly threshed and sold the crop, pretending not to understand subsequent demands by Maori for their grain. Like his predecessors however, Thomson soon abandoned the attempt to farm at the Heads. This episode

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338 Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 71. Hargreaves argues that this led to Maori potatoes degenerating, as instead of the finest examples being saved for reproduction, it was often the smaller and less successful potatoes that were left to seed the next crop.

nicely illustrates the difficulties Maori and European still faced in comprehending different ways of conceiving property, and in establishing ongoing relationships. It also illuminates the ways Maori struggled to adapt to new crops, and the fact that farming at the Heads was not much easier for Europeans than for Maori. It is unsurprising that Maori efforts to provide crops for market also dwindled as they became thoroughly discouraged by the lack of return on their cultivations.\textsuperscript{340}

Their efforts to organise production to produce more than a subsistence living were complicated by communal, and often bitterly disputed, ownership of land. The lack of land for Maori elsewhere in Otago meant incorporating people on the Peninsula whose primary ancestral rights lay elsewhere. Growing numbers of half-caste children also presented the Otakou Maori with problems, as these children had to be accommodated within traditional property arrangements.\textsuperscript{341} In 1876, H.K.Taiaroa was to complain to Parliament that:

\begin{quote}
something had to be done for these half-castes, because their fathers had not taken notice of them, and had not provided for them. During all these years they had been living with, and had been brought up by, their Native mothers. Some of them had obtained land, but, on the contrary, others were simply squatting on what belonged to the Maoris.\textsuperscript{342}
\end{quote}

Communal ownership of land also disenfranchised Maori from the Pakeha political process, as only male property owners able to demonstrate title to land could vote.

Moreover, Maori could not exercise full control over their property, and surrounded by a settler society obsessed with buying and selling land, this clearly rankled. Maori could not sell land to anyone except the Crown until 1862, which obviously placed them at a substantial disadvantage in trying to set a fair price. From 1862 they could not sell land without individualising title through the Native Land Court. Though it is dubious whether they had any authority to do so (nor whether they succeeded), the Scottish settlers had interfered to prevent their organising any new leasing arrangements with the remnant ex-whaling population at Otakou.\textsuperscript{343}

\begin{itemize}
\item [\textsuperscript{340}]There are no statistics available to verify this claim until 1891. By then, very little agriculture was practiced (a mere four acres), as will be discussed in the next chapter.
\item [\textsuperscript{342}]New Zealand Parliamentary Debates, vol. 20, 1876, p454
\item [\textsuperscript{343}]MS 0438/109, G. C. Thomson Papers, "Agreement by Maori Chiefs Not to Disturb European Settlers at Otakou." Dunedin: Hocken Collections.
\end{itemize}
all, reserve land, held in common, that could only be sold to the Crown, was quite useless as security against a loan; this effectively precluded Maori from raising capital against the value of their land.344

Such problems prompted a series of decisions by the Otakou Maori to allocate their land more precisely and gain titles. The first step was taken in 1859 when the leading rangatira Matenga Taiaroa and Karetai divided the Maori land at Otakou between them; each then held the mana over a block of land both at the Heads and on Cape Saunders. This was essentially a traditional arrangement. These leaders still held mana over the lands as a trusteeship for their people.

The crucial step, however, was the individualisation of title in 1868, when the Otakou lands were brought before the Native Land Court. According to Bill Dacker, the Otago Maori were convinced to bring their land before the Court at the urging of the Reverend Riemenschneider, and it is likely that Taiaroa played the key role in the decision.345 Again, the Karetai family and (in particular) H.K Taiaroa, played crucial roles in the divisions. They oversaw the initial division of the land into large blocks, along the lines already agreed by their fathers, and the subdivision of these into individual titles. It should be stressed that though titles typically had one owner named on the title, these owners were often the head of a wider household.346 These subdivisions into individual property title were subsequently recognised by the Native Land Court in 1868.347

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344 This problem unfortunately continues to bedevil Maori land held in multiple ownership.
345 Bill Dacker, *He Raraka a Ka Awa*, p131. At least, Taiaroa's key role is suggested by his behaviour at the court, where he successfully controlled much of the result.
346 This was the decision-making process according to H.K. Taiaroa, in his evidence before the Native Land Court in 1868. Native Land Court, "South Island Native Land Court Minute Books 1a," in *Maori Land Court Minute Books* (Dunedin: Hocken Library, 1868).
347 Ibid. For another discussion, see Dacker, *Te Maemae Me Te Aroha*, 45-46.
Figure 26: 'Certificate of Title: Index Record Map of Native Reserve, Otago Heads' 20 chains to an inch.\textsuperscript{348}

The map illustrates how Otakou Maori divided their land into property in a way quite foreign to the European method. Instead of a grid of fairly square oblong sections, the

\textsuperscript{348} 'Certificate of Title: Index Record Map of Native Reserve, Otago Heads', 20 chains to an inch, Otago Peninsula Museum. Unregistered Item. See also Donald McLeod, Plan of Otakou Native Reserve 1868, Land Information New Zealand (Dunedin), ML 135.
Maori sliced the land into narrow strips. These strips, running from hilltop to shore, allowed their proprietors to access a range of habitats, from forest, through littoral shore, to the ocean, into which each owner’s property right was held to continue (at least to low water). For Maori the critical ecotone had long been the ecologically diverse and productive shoreline, which provided important kai moana (sea food) such as cockles.

The subdivision was an attempt to reach a compromise between two different systems of property, and two different ways of constructing an economy in relation to ecology. Though as I have indicated, there were good reasons from the Maori perspective to individualise their holdings, this was also a decision made under duress. The European settlers were very keen for the Maori to abandon the evils of ‘beastly communism’. The settlers were also uneasily aware that, as it stood, the Otago reserves were not subject to their power. The reserve was, legally, Maori customary land beyond the power of the Crown: an island of aboriginal independence in an ocean of empire. For this reason, the European system of paternal management of Maori land, implemented from 1856 under the Native Reserves Act, by which commissioners were appointed to manage the leasing of Maori land to Europeans, could not readily function. This frustrated the European settlers. Cutten complained that the land

has a high position value, and it is to be regretted that from its great extent and its monopolizing the whole of the land available for the site of a town, Europeans of good character and industrious habits have been prevented from settling in this neighbourhood. Thus the Natives have been deprived of the many benefits which would have arisen to them both pecuniarily and morally, had the nature of the reserve permitted their close contact with a civilized community.

The problem, Cutten argued, was that ‘unless the owners consent to extinguish their original title and accept a title from the Crown, the Commissioners have no power to

350 Evelyn Stokes, The Individualisation of Maori Interests in Land (Hamilton: Te Maatahauraki Institute, 2002), 2; Angella Wanhalla, Transgressing Boundaries, PhD, 120.
deal with the land." The contrast between what might have been if Europeans had control clearly pained him for; if a town were laid out, Cutten reported, it would sell for ‘more than the usual upset price of £50 per acre, and that probably £5,000 would be obtained for it in the course of one or two years.’

By controlling how land was divided, and to whom it was allocated, Maori at Otakou retained much of their traditional system of tenure. The key point of difference was that Maori owners could now alienate their land according to the European notion that such sales completely abrogated all rights. This contrasted with patterns of Maori tenure, whereby people only purchased rights to share resources with the owner. This of course was part of the explicit purpose of the Native Land Acts of 1862 and 1865 – to allow the direct sale of Maori land to European settlers. In allowing this, the national government bowed to the incessant demands of both settlers and Maori that such sales be permitted. They remained concerned however that Maori would thereby relinquish too much land, and some restrictions were placed on the sale or lease of title. In Otago, however, because almost all titles had only family as owner, the only restriction with any force was the limit of 21 years on the term of a lease. There was no such dilemma for the Otago settlers, as Cutten’s remarks make plain: in convincing Maori to implement the acts’ provisions in Otago, their leaders simply hoped to more easily access, and ultimately purchase, the strategic Maori land on the Peninsula controlling the mouth of Otago harbour that they had failed to secure in 1844.

Europeans associated individualised title with civilised land use – by which they meant transforming the land’s ecology by farming land to supply a market economy.

354 As is well documented, divisions under the Native Land Act of 1865 elsewhere generally caused more problems; this was because ownership of each title was limited to 10 persons. In highly populated areas this often left some people with no rights to land at all. At Otakou, at least, provision could be made for all, even if some grievances inevitably followed decisions as to the extent and location of allocations.
356 This still rankled with Maori leaders. Taiaroa, for example, later had the Taiaroa Land Act 1883 passed, which specifically exempted him from all such restrictions, and allowed him to sell or lease his land exactly as Europeans did. See New Zealand Statutes 1883, 408.
The new titles, as designed by Maori and surveyed by McLeod, tried to allow owners to emulate this land use, but to also maintain access to the existing resources, especially those of the shore and sea. Yet within the confines of the Peninsula 'reserve' at least, this was not a workable compromise. Most of the properties were utterly impractical as farms, being simply too small, while few contained much arable land.\textsuperscript{357} In addition, as Charles Heaphy, Commissioner for Native Lands in Otago, stressed, they were not well-designed as farms. His report criticised

\textit{the very disadvantageous manner in which the boundaries of the estates at Otago Heads have been surveyed. Many of the sections are so narrow in respect to their length, as to appear in the plan more like roads than country sections; and fences upon them could only be maintained at great disadvantage.}\textsuperscript{358}

The result, he argued, was that Europeans would not lease the land unless sections were combined, while the Maori would not be able to maintain fences if cultivating their sections themselves. Thus, he concluded, 'in either case the advantage of individualising the title is annulled, and the evils of common holding must operate'.\textsuperscript{359} Fencing their narrow strips was a major problem for the newly created property owners, who often had to lease some of their land, to meet the expense of bounding the rest.\textsuperscript{360} This

Differences conceptions of property also underlay conflict over control over the fisheries surrounding the Maori land. The European settlers regarded the resources of the sea and foreshore as Crown owned, and therefore common to all. However, Maori as we have seen had divided their land in order to ensure their families had access to the foreshore, and their property owners literally staked their exclusive claims to the shore fronting their land, as shown by the fences running out into the ocean in Figure 27 (below), which demarcated each owners' property rights to the resources of the foreshore.

\footnotesize{357} Dacker, Te Maemae Me Te Aroha, 36.
\footnotesize{359} Ibid.
\footnotesize{360} Dacker, Te Maemae Me Te Aroha, 34.
Europeans appeared blind to the irony that they insisted Maori individualise title to land, yet contrary to Maori custom themselves treated the foreshore as an open access commons, assumed to be the property of the Crown. In his capacity as Member of Parliament for Southern Maori, H.K. Taiaroa displayed an early understanding of the potential this created for dispute. In 1874 he asked the House on what grounds the European settlers claimed the foreshore for public works, and queried whether this did not abrogate Maori rights to fisheries under the Treaty of Waitangi. By 1877 he had specific grievances closer to home. On 8 November he rose to ask of the Native Affairs Minister

1.) By what authority Europeans exercised fishing rights over the Mangahoe Inlet in the Provincial District of Otago, while the Native title thereto has not been extinguished?

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361 Boundary stakes running out through foreshore at Otakou, ca. 1910. Otago Peninsula Museum Collection.
2.) If the Europeans will cause a stop to such acts on the part of the Europeans until some arrangement for the extinguishment of the Native title has been made?\textsuperscript{363}

Taiaroa stated that Mangahoe Inlet (Papanui Inlet) was in the midst of his land, and that he had applied for title to the inlet itself. While he waited for this matter to be settled, ‘the Europeans were in the meantime plundering all the oysters and fish from the place, and selling them in Dunedin.’\textsuperscript{364}

The Minister John Sheehan’s reply was opaque, reflecting confusion over how Maori property rights of tenure to land, foreshore, and fisheries should be incorporated within the colonial system of titles deriving from Crown tenure. Regarding the claim to the property title over the inlet, Sheehan first chose to note that Maori had been guaranteed rights to their fisheries under the Treaty of Waitangi. He continued that a clause in the Native Reserves Act 1873 prevented the Native Land Court hearing Taiaroa’s claim to title, but which clause Sheehan was in the process of avoiding, by passing a bill before the Legislative Council. Sheehan then argued that the Government could not stop Europeans from taking the seafood of the inlet, though he did not know by what right they did so. Reverting to his prior point, he stated that if Taiaroa ‘could prove his title to the property’ then he could prosecute the Europeans for trespass.\textsuperscript{365}

To understand this reply, which notably seems to entirely ignore the question of Taiaroa’s property rights in the inlet and focuses only on the use rights to the fishery, a wider context needs to be considered. Just a few weeks prior, Judge Prendergast had infamously ruled in *Wi Parata v Bishop of Wellington* (1877) that the Treaty was a legal non-entity, because it had not been incorporated in statute. Sheehan’s reference to a bill before the Legislative Council seems to be referring to the 1877 Fish Protection Act. This act, the first to attempt to manage the harvest of New Zealand’s fauna more sustainably, had an intimate connection with Otago, since it was largely prompted by problems with the over supply of under sized and juvenile flounder from Otago Harbour and inlets such as Mangahoe. It attempted to address this problem by

\textsuperscript{363} New Zealand Parliamentary Debates, Vol.27, 1877, 65.
\textsuperscript{364} Ibid.
\textsuperscript{365} Ibid.
imposing size limits on the fish taken, and provided for fisheries to be set aside if necessary. After the law had been passed, Sheehan had an amendment added that explicitly protected Maori rights to fisheries under the Treaty of Waitangi. Sheehan therefore seems to be implying that Taiaroa could proceed by establishing his claim via the Treaty of Waitangi clause.\textsuperscript{366} Thus when next year, Taiaroa asked Sheehan in Parliament about his claim to title over Mangahoe again, (claiming to have been seeking to have the matter settled for a decade) Sheehan replied that Taiaroa could now bring a claim before the court — once this land had been made part of a ‘proclaimed district.’ What this means is somewhat unclear.\textsuperscript{367} The matter did not arise again before Parliament or the courts, and Taiaroa certainly never gained his right to either the property title of the inlet or the power to regulate the fishery therein. The Maori at Otakou continued to believe that they owned, not jointly but separately, not only the fisheries surrounding their land but also title to the foreshore, and to assert those rights whenever they could. However, they were ignored by the European settlers, who assumed as a deeply embedded cultural dogma that, as in England, the Crown owned the foreshore, and that its resources were therefore free to all.\textsuperscript{368}

But in the open sea no problems of property constrained Maori or European. There Maori competed vigorously. Maori at Otakou and Karitane for example led a brief resumption of commercial whaling between 1869 and 1877, as numbers of right whales (as well as some humpback, sperm and fin whales) were now returning to Otago coasts.\textsuperscript{369} George Robertson and Charles Bradshaw initially formed a cooperative company that took two whaling boats to sea each day through the season. One boat operated from Otakou, the other from Waikouaiti (Karitane as it is now); ten men from settlement formed the crews, most of whom were Maori or half caste, and all held shares in the venture. The first whale was caught in 1869, from which ten tuns of oil were expected in addition to the bone, for which the Otago Museum offered £40

\textsuperscript{366} Waitangi Tribunal, \textit{Ngai Tahu Sea Fisheries Report}, 58, 137-38.

\textsuperscript{367} New Zealand Parliamentary Debates, vol. 28, 1878, 308. I am entirely unsure why Taiaroa abandoned his claims, which Sheehan does not seem to have understood (or simply ignored) involved both absolute property rights and usufructory rights to fisheries.

\textsuperscript{368} Susan Hanham, \textit{Where Land Meets Water: Rights to the Foreshore of Otaakau Maori Reserve} (Dunedin: University of Otago, 1996). This has recently been made transparently and abundantly clear by the very recent declaration of Crown ownership — so tacit was the assumption that this land was owned by the Crown, that Maori rights were never explicitly extinguished.

\textsuperscript{369} For all information on the resumption of whaling I am indebted to unpublished material by Ian Church.
but was declined. Given that oil fetched about £30 per tun at the time, the return on each whale caught was very substantial. This encouraged Bradshaw and Daniel Ellison, steersman for the Karitane crew to enter more boats into the industry.

Like the whalers of the 1830s, the whalers killed the cow whales and their calves, prompting criticism from the *Otago Daily Times* that this threatened the sustainability of the industry. The newspaper was right. While in 1872 the Otakou boats had their most success, taking six whales and selling oil and bone here and in export to Melbourne to the value of £1218, only one whale was taken in each of the next two years. Whales were acknowledged as ‘not so plentiful’ by 1875 when two whales were killed. None were taken in 1876, and the last by these crews was killed in 1876.

Whaling had provided a lucrative winter activity that fitted well into an annual round of seasonal labour that Maori throughout the south were increasingly forced to have recourse to. Such reliance on seasonal labour was not what their leaders had envisaged or desired. As James Stack remarked, ‘men who can trace their pedigree up to the creation and even beyond it shrink from the yoke of hired servitude.’ Tiaroa was one such, and was later to recall that ‘he had been compelled to commence work when quite a lad – to milk cows.’ When Ngai Tahu petitioned the government in 1874 for redress for broken promises regarding their land sales; they began by stating that they were now totally dependent on the labour market for seasonal work:

> When they [the Europeans] want us and come upon us, we are able to gain a subsistence for ourselves and our children. Should this source fail as other springs do because dry we will become paupers in the presence of the present lords of the soil.

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370 *Otago Daily Times*, 14 August 1871.
371 However Ian Church records that one last whale was harpooned by a Maori crew in February 1881. In total as many as 24 whales were taken by the whalers at Karitane and Otakou (including one taken by a boat from Purakaunui), while an American whaler also took a sperm whale.
372 *Otago Daily Times* 12 January 1872.
374 Cited in Mackay, "Middle Island Native Claims (Report by Mr. Commissioner Mackay Relating to"
*Appendix to the Journal of the House of Representatives*, 1891, G7, 43.
375 Ngai Tahu petition 1874. Quoted in Dacker, *Te Maemae Me Te Aroha*. 
This was a recurrent theme throughout the remainder of the nineteenth century.\textsuperscript{376} In the 1850s and 1860s, Otago, as with other settlements, faced a chronic shortage of labour, so Maori labour was in ready demand. Work was available during the 1870s too, despite the fact that Otago, as elsewhere in New Zealand, became awash with cheap labour, as a renewed tide of immigrants arrived in the wake of Vogel’s assisted immigration schemes. The amount of public works and a facility with trades such as shearing and harvesting, and, for some, whaling, helped tide the Otakou Maori over this period. But after the brief burst of debt-boosted expansion in the latter 1870s, the settlement was plunged into the ‘long depression’ of the 1880s and early 1890s; employment became very hard to find.

From the 1870s onwards, the Kai Tahu ship, in particular Hori Korei Taiaroa in his capacity as Member of the House of Representatives for Southern Maori, therefore made intensive, expensive (and unsuccessful) efforts to regain land.\textsuperscript{377} Numerous petitions to Parliament during the 1870s testified to their urgent need for land.\textsuperscript{378} In 1881, Mackay testified that economic conditions had begun to bite, and larger quantities of land were becoming imperative. He argued that Maori at Otakou and elsewhere could not be expected to subsist on such small holdings when

\begin{quote}
A European finds even a hundred acres too small to be payable, and is frequently compelled by circumstances to have recourse to the money-lender, and probably in the end loses his farm...This is by no means an isolated case, and demonstrates forcibly that small holdings in the present state of New Zealand are not conducive to prosperity...\textsuperscript{379}
\end{quote}

As the depression began to bite, disputes over land ownership flared within the reserves. Tare Wetere Te Kahu told the Smith-Nairn Commission of Inquiry in 1880 that ‘they were still quarrelling’ over land.\textsuperscript{380} In fact, the new system of land ownership at Otakou created its own problems. A few chiefly families such as the

\textsuperscript{376} See for example Alexander Mackay, "Middle Islanc Native Claims (Further Reports by Mr. Commissioner Mackay Relating to)" 1891, G8, 5.

\textsuperscript{377} For example, in 1873 H. K. Taiaroa was given £3000 to pursue land claims. In 1891 he estimated the cost of the Otakou claim at £3200, a sum he sought to have returned. See Bill Dacker, "The Effects of Loss of Land at Otakou," (Dunedin: Hocken Library, n.d.), 68-69.

\textsuperscript{378} Kai Tahu petitioned Parliament in 1872, 1874, 1875, 1876 and 1878. The Smith-Nairn Commission of 1880 eventually heard their case, but its funding was withdrawn midway through the process, and only an interim report, albeit one which supported Kai Tahu, could be tabled. See Alexander Mackay, "Middle Island Native Claims (Report by Mr. Commissioner Mackay Relating to)," Appendix to the Journals of the House of Representatives 1891, G7, 3-4; Dacker, Te Maemae Me Te Aroha, 66.

\textsuperscript{379} ‘Mr. Alexander Mackay. N.C. to the Under Secretary, Native Department,’ 1881, G8, 16-17.

\textsuperscript{380} Dacker, Te Maemae Me Te Aroha, 44.
Ellison and Taiaroa families were able to expand their lands by leasing smaller holdings from poorer neighbours. Their families became relatively prosperous, and their children highly educated. But very few had their advantages, underpinned by comparatively large land holdings.

In conclusion, the Maori economy at Otakou in the two decades 1861-1881 was in a state of flux. They faced many of the same difficulties that Europeans confronted – small and often uneconomic holdings, on land unsuitable for arable agriculture, with problems accessing markets. But Maori faced these problems in especially acute form, and they did so without the cultural legacy of experience in farming and operating as agriculturalists within a commercial market economy. They had attempted to develop property arrangements to match the new conditions, but by emphasising the importance of access to the sea they rendered their difficult lands still harder to enclose and cultivate, while the property arrangements they attempted to impose upon the foreshore and estuaries were simply ignored by Europeans. The upshot was that very little ‘improvement’ occurred on Maori land, in comparison to the European land, where settlers were assiduously clearing, fencing, and stocking their properties. As a result quite different environments developed on Maori and European lands. The following section explores the evolution of such different environments on the Peninsula, beginning with the worst environmental change in the Maori lands – the spread of sand.

8.4 The environmental impacts of settlement, 1861-1880

On 25 September 1893 Hori K. Taiaroa rose to speak before the House of Representatives. His concern was the spread of drifting sand at Otakou. He remembered, he said,

the condition of this place in 1850, and there was very little drift-sand there at that time. In 1860 [sic] the Natives entitled to that reserve applied to have it subdivided and individualised so that each person might be in a better position to deal with it and improve the land. Since 1873 the spread of drifting sand had greatly increased. He himself was a part-owner in that reserve, and some of them had applied to the other owners to fence their sub-divisions, and to take some steps to stop the drifting of the sand by growing grasses; but they had always replied that they would not do it, and there was no law to compel

381 Ibid., 79-80.
them to do so. The consequence was, it was still in the same condition now. When some of them fenced their land, the other owners refused to do it, and nothing could be done to stop the sand from covering over their fences. At the present time there were between 900 and 1,000 acres of land covered with sand-drift. The place was situated near the harbour, and there was a dispute as to where the sand came from—whether it came from the river, or was caused by the harbour-works, or whether it was from sand on the place itself, which was loose and was blown about...\textsuperscript{382}

H. K. Taiaroa’s minimisation of sand movement prior to the mid 1870s has to be read against the enormous acreage of ruined land confronting Otakou Maori by 1893. Photographs and contemporary accounts make it clear sand movement and shoreline erosion was well under way before 1870. During the 1860s sand spread north and east up the slope behind Te Rauone Beach, forming a bank a mile wide and two miles long by 1870; it also spread south of Wellers rock, over the flat fronting the little valley of Omate.\textsuperscript{383} Peter Thomson described seeing in southerly storms in the 1860s ‘the sand raised in thick clouds, and carried onward in tons, and spread over the grass and among the trees at the upper edge, where it lies, never to go back.’\textsuperscript{384} The sand swallowed the small lagoon that had lain behind the south end of the beach, and had provided easy access to water fowl.\textsuperscript{385} Matenga Taiaroa had lived at Pukehau by the lagoon in the 1850s, but in 1859 was baptised, and shifted his house, piece by piece, round the corner to the small valley of Omate.\textsuperscript{386} During the 1860s sand drove Potiki and his people from Te Ruatitiko, which had been the largest of the kaik in the 1850s. Mantell had found 63 people there in 1853.\textsuperscript{387} By 1862 the Church there had been abandoned, and the village itself was later completely buried.\textsuperscript{388} After Te Ruatitiko was buried, a mission reserve and cemetery was established at Omate on ten acres

\textsuperscript{382} New Zealand Parliamentary Debates, ‘Otago Heads Native Reserve’ 25 September 1893. vol.82 (6 September-6 October), 602-03.
\textsuperscript{384} Ibid.
\textsuperscript{385} Ibid.: 268.
\textsuperscript{386} Knight, Otago Peninsula: A Local History, 24. Burns recorded that he had lived at Tahakopa, which lay close by the lagoon. Mantell also recorded Taiaroa as living at ‘Takopa’ in 1853.
\textsuperscript{387} Appendices to the Journals of the House of Representatives, "Census of the Middle Island Natives Made by Mr. Commissioner Mantell in 1848 and 1853," (George Didsbury, Government Printer, 1886), 3.
\textsuperscript{388} T. A. Pybus, Maori and Missionary: Early Christian Missions in the South Island of New Zealand (Christchurch: Cadsonbury Publications, 2002), 138, Knight, Otago Peninsula: A Local History, 24. Pybus recorded: ‘Ruutitiko being gradually depopulated by reason of the sand drifts, & the Church was also suffering from the same cause, being partly buried in the sand, the chief [Taiaroa] opened his house at Omati for Christian services’.
provided by Kareta, with Taiaroa providing much of the initial funding.\textsuperscript{389} A church was built there in 1864. Hoani Wetere Korako had built a church and school at Tahakopa; it was also abandoned, and Korako shifted to Te Taupo, on the hillside above Te Rauone Beach.\textsuperscript{390} By the late 1860s, as Figure 28 (below), shows, the land where the Weller’s station had stood was quite uninhabitable.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure28.jpg}
\caption{Te Rauone Beach, 1869?\textsuperscript{391}}
\end{figure}

Figure 28 shows Harwood’s store (the large building in the background) quite surrounded by a sea of sand, and only a few forlorn ngaio trees struggling to survive amid the drifts. Davison’s survey suggests that the shoreline running south from a point about midway along Te Rauone Beach eroded throughout much of the nineteenth century, confirmed by the shifting of cribs inland from the seaside.\textsuperscript{392} Campbell argues the shoreline was scoured as the changing shape of Aramoana Spit narrowed the harbour entrance, and pushed the harbour channel inshore.\textsuperscript{393} At Omate, in 1870 Thomson described many buildings as gone long since:

\begin{quote}
a pretty broad slice of land on which they stood has been washed away by the sea, and what was once a pretty green flat, with a few old ngaio trees on it, is
\end{quote}

\textsuperscript{390} Pybus –MS 534/1 Thomson, "On the Sand Hills, or Dunes, in the Neighbourhood of Dunedin," 268.
\textsuperscript{391} Port Chalmers Maritime Museum; Neg 2929, no date. This photograph was taken by the schoolmaster, Leask, probably in 1869 when he first took up his post. According to Magda Wallscott, it was taken from the upper kaik (Omate), where the church and school now stand. See Louisa Magdalena Wallscott, "Notebook Entitled, ‘Notes Otakou, Otago ‘Tenths’," (Dunedin: Hocken Library, n.d.).
\textsuperscript{392} Matthew Campbell, "Preliminary Investigation of the Archaeology of Whaling Stations on the Southern Coast" (University of Otago, 1992), 124, Knight, \textit{Otago Peninsula: A Local History}, 23-24.
\textsuperscript{393} Campbell, "Preliminary Investigation of the Archaeology of Whaling Stations on the Southern Coast", 124.
now a sandy waste. A little further on, Harwoods house stands on the beach, and a short way in was a fine garden, with fruit trees and bushes in plenty. But the sand has put horticulture to the flight, and the garden is now reduced to very small dimensions; the tops of the bushes may be seen sticking up through the sand. If it goes on as it has been doing, a very short interval will elapse ere the whole flat will become as barren as the beach below.394

The Maori and European farmers (increasingly leasing land in this area) now confronted the results of decades of grazing and burning on marginal habitats. Though in doubt over the cause of the primary problem (the source of the sand), Taiaroa was certain of the only solution: replanting the dunes. He sought government help to ameliorate the difficulty in getting individuals to contribute to this common cause.

Taiaroa’s inability to organise the necessary communal effort illustrates the extent of intertwined change in property rights and social structure. The mana of rangatira was no longer identified so closely with the mana of the community. As individuals no longer maintained their entitlement to use land from their ongoing contribution to the wider community, the leaders of the community found it increasingly difficult to direct communal activity.

As farming intensified elsewhere on the Peninsula, European settlers began to face the same problem, and had similar difficulty organizing their responses. By 1870 sand blown north over Lawyers Head swathed the land between the Tomahawk lagoon and the ocean, and had begun spilling into the valley behind. At the aptly named Sandfly Bay, Peter Thomson saw sand ‘flying from the shoulders of Sandymount in thick clouds [and] deposited on the beach at the entrance to the Inlet’.395 Thomson elsewhere noted that by 1870 the settlers’ practices of burning and grazing the sand hills fronting Sandfly Bay had freed sand to encroach inland, swallowing the lagoon and marsh that had once formed ‘an extensive flat’ in the valley floor.396

Bare and sandy land proved an ideal nursery for weeds. By far the worst weeds were thistles, especially the Scotch thistle (Cirsium vulgare) which produces prodigious

395 Ibid.: 265.
quantities of seed.\textsuperscript{397} Between 1862 and 1870 the Provincial Government required property owners to control thistles on their land, but there was no official means of identifying non-compliance, and their strictures did not apply to Crown Lands or to Maori land.\textsuperscript{398} This rendered their efforts quite useless on the Peninsula. During the 1860s Scotch thistles rapidly colonised much of the land around all the Peninsula settlements, spreading south from Maori land, described as a ‘complete nursery for seed’, and north along the road sides as they were pushed out from Andersons Bay.\textsuperscript{399} In 1864 Alexander Begg, Curator the Botanic Gardens, inspected the Maori land after a request from the Secretary of Public Works. He described it as infested with thistles, noting that fully twenty acres immediately behind the former whaling station were entirely covered, ‘so much so that horses and cattle cannot pass through them’, and scattered patches were spread all over the reserve and down the Peninsula as far as Seaton’s farm near Portobello. He estimated the cost of clearing the thistles at £400 in the first year, and a further £1000 per year for two to three years to keep new growth down.\textsuperscript{400} Such enormous sums were never going to be forthcoming from a body that included men like councillor Grant, who when it was moved in 1865 that Crown lands should also be subject to the ordinance, objected to spending money on eradicating ‘the emblem of his country, of which he was proud, indeed, as a stalwart, proud emblem’.\textsuperscript{401} Indeed, in addressing that motion several councillors pointed to the Maori reserve as the primary source of the problem, and the reason they could do nothing to prevent its spread. A petition from Peninsula settlers presented to the council in 1866 also blamed the Maori, but demanded too that the ordinance be amended so that an Inspector could identify culprits, rather than the law being inoperative unless ‘settlers laid informations against their neighbours.’\textsuperscript{402}

\textsuperscript{397} Department of Agriculture, "Department of Agriculture Annual Report," (Wellington: Samual Costall: Government Printer, 1894), 64.
\textsuperscript{398} For an excellent discussion of the various Provincial Ordinances regarding thistles at this time, see Neil Clayton "Weeds, People and Contested Places: Selected Themes from the History of New Zealanders and Their Weeds 1770-1940" (University of Otago, 2007), 165-81. Also Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 271.
\textsuperscript{399} Alexander Begg reported to the Provincial Government in 1867 that he had ‘found thistles in great abundance extending eight miles up from the Maori reserve (where they first originated) and yearly spreading.’ See Alexander Begg, "Report from Mr. Alexander Begg," (Dunedin: Archives New Zealand, 1867).
\textsuperscript{400} ‘Alexander Begg, Botanical Gardens, 27 April 1864 to the Secretary of Public Works’ in Otago Witness, 7 May, 1864, 14.
\textsuperscript{401} ‘Provincial Council,’ Otago Witness, 16 December, 1865, 4.
\textsuperscript{402} ‘Provincial Council,’ Otago Witness, 24 November 1866, 7.
In other words, just as Maori found it very hard to force individuals by law and penalty to control environmental problems for the common good, so too did Europeans. Agricultural correspondents to the *Otago Witness* during the 1870s complained year after year about the growing problem, always blamed on Maori and, especially after the repeal of the thistle ordinance, on absentee owners. In 1875, thirty European settlers (most from the vicinity of Tomahawk, at the other extremity of the Peninsula from the Maori land) petitioned the Provincial Government to reinstate a thistle ordinance upon the Peninsula, deploring the great spread of thistles as most injurious to grass and other cultivated land (However beneficial they may be to poor uncultivated land). They are a nuisance which will with every year get worse and no individual trouble or expense will be of any use.

The Provincial Government responded that year by imposing another Thistle Ordinance to be applied only on the Peninsula. However, there was no agreement over who ought to take responsibility for eradicating the weed. Political control over the Peninsula was effectively divided between the Peninsula and the Portobello Roads Boards. In this case the Peninsula Road Board, led by John Mathieson, wanted to enforce the Ordinance, and sought the cooperation of the Portobello Road Board, which however declined, arguing it was best left to individual settlers. In the event, the system of Provincial Government was disbanded the following year, obviating the measure. As a result, nothing was ‘spreading faster and thriving better than “Scotchmen”’, which had ‘a monopoly of the soil as the land yielding almost no more

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403 These reports make plain that thistles became a serious problem in the 1870s. See for example ‘The Crops, Their Condition and Extent: Portobello and Broad Bay,’ *Otago Witness*, 15 February 1873, describing thistles growing in sawyers’ clearing and by roadsides ‘as thick as they can stand, and higher than man’s head’; ‘The Crops, Their Condition and Extent: Andersons Bay and Tomahawk,’ *Otago Witness*, 21 February 1874, describing thistle seed on the wind as ‘snow adrift’. In 1877 this correspondent examined a Scotch thistle and found it had 87 heads, with just one head found to contain 367 seeds. ‘The Crops, Their Condition and Extent: Andersons Bay and Tomahawk,’ *Otago Witness*, 14 April 1877.

404 Inhabitants of the Otago Peninsula, "Petitions Presented: Inhabitants of the Otago Peninsula (30) Session 34 May-June 1875," (Dunedin: Archives New Zealand, 1875). The notion thistles might aid uncultivated land was widespread at the time, though disputed. Some also felt that thistles would die out unaided given time as the land became ‘thistle sick’. This was not so. See ‘The Crops, their Condition and Extent: Portobello and Broad Bay,’ *Otago Witness*, 14 April 1877.

405 ‘Portobello Road Board’ *Otago Witness*, 11 December, 10; ‘Peninsula Road Board,’ 22 January 1876, 17.

return than when the Maori was lord in the land, as when the primeval forest was as yet unmolested'.

Though none at this point provoked consternation on the scale of ‘Scotchmen’, other weeds and pests also arrived and thrived. The agricultural correspondents from ‘Portobello and Broad Bay’ and ‘Andersons Bay and Tomahawk’ increasingly complained of weeds such as ‘Cape-weed’ (this probably referred to cats-ear, *Hypochaeris radicata*) and to a lesser extent dandelion (*Taraxacum officinale*) ‘usurping the soil’, especially on ‘older clearings and poorer lands’, and causing a ‘large amount of labour and trouble’. Neil Clayton indeed has argued that the ‘single biggest problem’ faced by New Zealand farmers, until well into the twentieth century, was obtaining clean seed, or finding the time and means to clean it themselves.

It was typically argued that the spread of weeds indicated ‘poor farming’. In the very limited senses that farmers’ equipment and animals provided the principal vectors for the spread of seed, and that farmers could therefore contain weeds if they were willing and able to devote a great deal of time and effort this was true. But of course the seed sold to farmers was far from pure, and typically contained a great variety of other weedy pasture species besides the few valued grasses. Because the bulk of the oats crop was fed to horses not humans, for example, Peninsula farmers probably tended to follow the nationwide pattern noted by Hargreaves, of buying

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410 ‘The Crops, their Condition and Extent: Portobello and Broad Bay,’ *Otago Witness*, 15 February 1873. For discussion see ibid., 158 especially.
411 The writer of ‘Station, Farm, & Garden: Agricultural Seeds No. IV,’ *Otago Witness*, 1 April 1882 despaired that ‘the indifference shown by our farmers as to the quality of the seed is proverbial’, and argued this was one cause of New Zealand seed being refused in overseas markets. The New South Wales Government examined ‘grass and clover’ seed imported from New Zealand in 1892 and found it to comprise 40 percent perennial rye grass, 20 percent creeping trefoil, and 40 percent miscellaneous species, including ‘goose grass, dock, sorrel, silver grass, plantain, wild amaranth, Yorkshire fog, and other useless weeds and grasses’. Their findings were concerning enough to be reported here. See Agriculture, "Department of Agriculture Annual Report," 49-50.
cheap, and hence poor and weed-infested seed.\footnote{Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 358. This applied to other crops grown to feed stock – turnips, for example, so that according to the \textit{Otago Witness}, 1 April 1882, ‘The indifference shown by our farmers to the quality of the seed is proverbial’.} And, as they progressively cleared forest, farmers provided introduced weeds with ideal habitats. The spread of weeds was thus concomitant on all farming, whether poor or no. The result, as an \textit{Otago Witness} editorial despairingly noted as part of an insistence on the ‘absolute necessity for more skilful and scientific husbandry’, was that ‘there are still thousands of acres in the most thickly populated parts, which are supposed to be laid down in English grasses, but which really are more than half covered with weeds.’\footnote{\textit{Otago Witness}, 22 December 1872.}

Writing the first report of the Dunedin Naturalist’s Field Club in 1872, Peter Thomson also observed the spread of weeds. But he noted other, related phenomena:

The spread of acclimatised weeds is much noticed by the members, - wither the dock, cape weed, thistles, or chickweed being found everywhere over the district.

On the other hand, some of the native plants are becoming scarce, and will soon be extinct – clearing the land, the grazing of cattle, and the ravages of fire are the main causes of this. The larger native birds, too, are gradually dying out; there are very few in the bush near town, while cats and rats are common.\footnote{\textit{Otago Witness}, 3 Aug 1872, 6.}

Here Thomson accurately summarised how the development of farming simplified habitats, and caused biodiversity to plummet. Farmers’ removal of forest and its replacement with grass were the most significant mechanisms of environmental change on the Peninsula between 1860 and 1900. As we have seen, removing forest was a destructive process: the trees were a weed in the way of farming, and were usually simply hacked down and burnt. By the 1860s however there were at least some uses found for the timber, especially as the amount of easily accessible wood diminished, and the population of Dunedin increased.

Firewood had long been a valuable commodity in the city. All settlers relied on burning wood to cook food, launder clothes and heat homes; they often had very large fireplaces. Settler households therefore required prodigious amounts of firewood. No good data are available on quite how much wood they needed, but we can make some
In 1850 the *Otago News*, concerned at the price of wood, reported that Dunedin residents were paying over 14s for a cord of firewood (best visualised, as a stack four feet high, 4 feet deep and eight feet long), which only lasted a household some three weeks in winter. This suggests annual consumption in the order of perhaps 10 cords of wood per year per household. Given that the average labouring wage was then three shillings per day, paying for firewood was quite beyond the means of an ordinary labourer — and the price only rose, being 23s a cord in the winter of 1857. The obvious recourse, which became very common, was to steal wood from crown land, but even then it still took a man a day’s labour to cut a cord of wood.

With the improvement of communications, Peninsula farmers could bring their wood to market. As we have seen, a few sawyers had operated on the upper harbour from the first years of settlement, and by the mid 1860s a ‘considerable amount of firewood, posts and rails, &c’ were carted to town from Andersons Bay. Unfortunately the favoured firewood, manuka (actually kanuka more often than not), was rare there. Still, rising demand and prices for firewood through the 1870s caused continued bush clearance in Andersons Bay, where several brick kilns using Peninsula clays also operated that required a lot of local fuel. By 1876 so little forest was left in the vicinity that fencing timber had become very scarce.

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415 My estimate that households burnt 10 cords is probably conservative. The only other estimate of wood consumption by settlers is that of Rollo Arnold. He estimated that settlers in the mid 1880s burnt 5 tons of wood per head. This equates to about 9 cords per head (for conversion of cords (units of volume, 128 cubic feet) to tons (units of weight, 2240 lbs), I rely on a request for tenders issued by the Army, which considered 71 cubic feet of hard wood equivalent to a ton. *Otago Witness* 21 December 1861 p3). Arnold’s estimate includes all uses for firewood, not just domestic. Arnold, *New Zealand’s Burning: The Settlers’ World in the Mid Eighteen Eighties*, 137.

416 For the varying price of a cord of firewood, see the *Otago News*, No.4, April 9 (‘12s or so’); *Otago News*, No. 57, 6 April 1850 (‘9s and 10s 6d’); *Otago News*, No.83, 5 October 1850 (‘at least 14s’).


418 This practise prompted Cargill to evict squatters from the Town Belt in 1850. But for the prevalence of stealing wood from the Town Belt even amongst the well-to-do, see ‘Rambles Round Dunedin: The Town Belt,’ *Otago Witness*, 12 August 1865, p12. This states one member of the executive had taken over 150 cords. A settler’s letter states a man could cut a cord in a day: ‘Letter from W. Duff to W. R. Douglas, 4 May 1849’ *Otago Journal* No.III, 74.

419 ‘Rambles Round Dunedin: The Peninsula to the Big Stone,’ 4 March 1865.


421 ‘The Crops, their Condition and Extent: Andersons Bay and Tomahawk,’ *Otago Witness* 18 March 1876; 14 April 1877.
Forest lasted only a little longer about Portobello, where practices also changed in the mid 1870s. The ‘constant demand’ for timber meant that the remaining podocarps were now picked out and pit sawn, though the prohibitive cost of transporting timber to Dunedin meant that only a small local market could be served.\textsuperscript{422} It was this, more than a shortage of timber, that prevented operations such as the Dickson’s saw mill from becoming more than small family concerns.\textsuperscript{423} And, instead of ‘cutting down the bush indiscriminately…the greater part of it is cut into cord-wood for sale’. As a result however, ‘manuka’ had been virtually removed, and the settlers were forced to turn their attention to ‘mixed wood’ to supplement their incomes.\textsuperscript{424} Once the better burning wood had gone, and once rail transport allowed coal to compete with wood as a source of fuel in the later 1870s, the Peninsula settlers found they once more had simply too much wood on their hands; a visitor in 1878 observed:

> Thousands of tons of stacked firewood are to be seen on the clearings, much of which is rotten. Where stones are not available, it is stacked to form fences, but it seems a sad waste considering the scarcity of this material in Dunedin. I suppose with increased water carriage it will pay to bring it to market, but in the mean time it is so much capital sunk.\textsuperscript{425}

In 1874 the Portobello correspondent argued these changing patterns of clearance, and a lack of drought that year, had increased control of burning. Fires had not spread to burn fences and standing bush as had occurred ‘not infrequently’ previously— as in 1872 when bush fires ‘raged for miles’.\textsuperscript{426} Yet in subsequent droughts uncontrolled burns still resulted. The very worst fires happened on 14 October 1881, ‘Black Friday’ as it became remembered on the Peninsula. Two fires escaped control that day after a strong warm northwest wind sprang up. One, about Sandymount, burnt off about 15 acres of bush, as well as miles of log fencing, and tons of hay; Larnach alone lost 1000 cords of firewood. A still worse conflagration around Harbour Cone destroyed the cheese factory there, as well as numerous farm buildings, houses,
firewood and fencing. Many settlers, most of whom were uninsured, were reportedly ‘half ruined’. 427

The ecological effects of forest destruction were myriad. The removal of forest altered soil structure, fertility and hydrology by changing the soil’s interactions with sunlight, wind, and water. The scale and frequency of erosion events increased markedly as forest was cleared. Streams dried up, and disappeared, and lagoons were swamped with silt. The firing of forest, the loss of habitat, and the intrusion of stock into forest remnants affected plant and animal species at all trophic levels.

Forests exert much more control than grasses over their immediate environments. In the nineteenth century it was often argued that deforestation actually changed the climate. At a local level this was quite true. 428 Forest regulates, for example, the temperature and hydrology of the soil — soil that the forest has of course largely created. It also maintains a much more constant air temperature and humidity than grassland by providing shelter from wind, sunlight and water. Once laid down in exotic pastures, or ploughed for crops, soil was exposed to much more variation in these elemental variables, and was largely stripped of its microbial and invertebrate biota. 429 The resulting profound changes in the ecosystems of the soil had considerable effects on landowners.

Changes in soil hydrology were especially important. Grass does not compare with forest’s capacity to intercept water, and return it to the air via transpiration, nor to percolate water through forest litter before letting it seep into the soil where it is withdrawn through deep and extensive root systems. The change to grass therefore had very important effects on soil structure and hydrology, and thus on erosion. One immediate effect of removing trees is to greatly increase the amount of water reaching

427 ‘Sandymount: From Our Own Correspondent,’ Otago Witness, 22 October 1881; ‘The Bush Fires on the Peninsula,’ Otago Witness, 22 October 1881; see also Huggett, "The Historical Geography of the Otago Peninsula", 78, Knight, Otago Peninsula: A Local History, 62.
428 This is well documented in very many studies worldwide. For research in the New Zealand context, see R. J. Davies-Colley, G. W. Payne, and M. van Elswijk, "Microclimate Gradients across a Forest Edge," New Zealand Journal of Ecology 24, no. 2 (2000).
429 Davies-Colley et al found that wind exposure inside forest was only some 20 percent of that in open pasture. Compared to pasture soils, the forest floor was much shadier, cooler, and moister during the day, and warmer and drier at night, with little temperature variation. Soils under pasture in contrast followed atmospheric conditions much more closely. See Ibid.: 115-19 especially.
However, the downstream effects are complex, and not so obvious. Under forest, water that enters the ground does so relatively slowly, and roots withdraw much of it. The water that escapes the forest’s clutches gradually accumulates into channels and becomes rivulets and streams. Under grass, however, much of the water simply runs off the surface, especially on steep slopes, or when it has been compacted by stock. This promotes rapid floods of water in periods of high rainfall, and prevents the accumulation of water into perennial streams, again especially where stock pug the ground preventing proper drainage.

Because of the spongy effect of forest litter, and the shade provided by leaves, forest floors often feel moist and cool; the surface under grass more often feels dry. But without forest, the soil itself is actually much wetter (like any container soil fills from the bottom up). Successive drying and wetting of top soils now exposed to variations in wind and sunlight and trampled by stock caused the ground to swell and shrink, crack and fissure. This allowed water to flow down to the bedrock underlying the soil. The flow of water across this impermeable layer created a plane of weakness above which everything could shear off if the forces holding it in place were overcome by gravity. This might occur whenever the soil became saturated: then, it was much heavier, and much more fluid. And in the absence of forest, soil became saturated much more often.

The inevitable result was that huge masses of heavy soil slid down hill, either suddenly in almost liquid mud and debris flows, or slowly but inexorably, on the slick surfaces created by the action of water. Massive landslides and debris avalanches and flows became an especial problem above Portobello, around Hoopers Inlet, and

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430 M. Crozier stationed a series of rain gauges inside and outside a remnant patch of forest on the Peninsula from 1967 to 1969. He found that rain gauges outside the forest always recorded more rain, while those furthest inside the forest almost always recorded least rain. See Michael Crozier, "Mass-Movement in Eastern Otago: The Relationship of Slope Instability to Environmental Factors and Its Importance to Slope Development on the Otago Peninsula" (PhD, University of Otago, 1970), Figure 31.

431 Ibid., 107-15.

432 Ibid., 112-14, 22.

433 Ibid., 112-14.
along the eastern flank of the ridge running towards Otakou – all areas underlain by weaker pyroclastic rocks.\textsuperscript{434}

Some farmers to this day consider erosion inherent to these areas.\textsuperscript{435} D. M. Leslie's studies of soil and erosion on the Peninsula confirm that these elements of the landscape are inherently unstable. However Leslie also considered that landslides had 'virtually ceased' with the establishment of slope equilibrium under forest, and concluded that human activity had reactivated major erosion events as newly cleared and grassed slopes evolved to reach a new equilibrium.\textsuperscript{436} Michael Crozier's study of mass-movement in the area reached identical conclusions. He argued that human settlement 'has in recent times so drastically upset the long established environmental balance that a vast redistribution of energy is currently taking place within the system.'\textsuperscript{437}

He pointed out that nearly all the major landslips have occurred since the removal of forest, and that the coincidence of extreme variation in vegetation with extreme variation in erosion processes was good evidence that they were causally related.\textsuperscript{438} Thus the readjustment of slope stability by mass-movement is one of the more apparent manifestations of the environmental effects of settlement.

These processes began to become apparent in the 1870s, being first noted by the Portobello correspondent to the \textit{Otago Witness} in 1871, when he described landslips carrying 'large portions of the soil on to the beaches', destroying many acres of pasture.\textsuperscript{439} In 1877 he noted that as 'the stumps decay from our paddocks, the plough is being more used...giving the tilled lands that finished aspect they sadly need when

\textsuperscript{434} See D.M. Leslie, "Landslide Potential on Otago Peninsula," ed. Department of Scientific and Industrial Research New Zealand Soil Bureau (New Zealand Soil Bureau, Department of Scientific and Industrial Research, 1974). He found that of 504 landslides identified in 1970, 297 occurred where the basement lithology (the underlying rock) was pyroclastic, as opposed to flow rock, despite pyroclastic rock covering only about a quarter of the Peninsula. 97 percent of slides occurred on hill land between 12 and 28 degrees.

\textsuperscript{435} For a useful discussion of contrasting attitudes to erosion on the Peninsula see Marion Read, "The 'Construction' of Landscape: A Case Study of the Otago Peninsula, Aotearoa/New Zealand" (PhD, Lincoln University, 2005), 157-60.

\textsuperscript{436} Leslie, "Landslide Potential on Otago Peninsula," 17-18. He stated a ‘marked increase in landslide frequency’ had occurred.

\textsuperscript{437} Crozier, "Mass-Movement in Eastern Otago: The Relationship of Slope Instability to Environmental Factors and Its Importance to Slope Development on the Otago Peninsula", 90-91.

\textsuperscript{438} Ibid., 99, 103.

\textsuperscript{439} 'The Crops, their Condition and Extent: Portobello and Broad Bay,' \textit{Otago Witness}, 4 March 1871.
encumbered by these unsightly relics of the bush'.

This early ploughing may well have been down up and down the slope, rather than along the contours, further exacerbating the erosion effects. In early February that very year large slips caused havoc: some settlers had to fly from their houses to escape torrents of mud, and ‘such a state of ruin to outhouses, fences, gardens and pasture has fallen upon the inhabitants that a feeling of consternation pervades the entire district.’ Roads and bridle tracks remained blocked for weeks with ‘vast masses of debris’, and it cost well over £150 to clear the roads about Portobello. Several slips had blocked the road through to Macandrew Bay, while a ‘mass of soft mud that covered the road for some distance up the hill’ had sealed the only road access to Papanui Inlet via Weir Road, as seen in Figure 29 (below), which shows Kerr’s house, adjacent to Weir Road, embedded in a river of mud.

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Figure 29: ‘Kerr’s House after the slip (Weirs Line)’

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441 Read, "The 'Construction' of Landscape: A Case Study of the Otago Peninsula, Aotearoa/New Zealand", 157. According to a farmer Read interviewed this was the method early farmers used.
442 ‘Portobello 7th February,’ *Otago Witness*, 17 February 1877, 7
444 ‘Kerr’s house after the slip,’ Otago Peninsula Museum, OP 96 173/3
Over the ridge above the inlet, a similar 'torrent of mud' had carried much of a paddock, together with fences and large trees, down the slope on to the flat. More large slips had scoured out the southern slopes of Mt. Charles, affecting several properties. But the worst problems were at Sandymount, where one slip alone had carried off ten acres of grass and potatoes, leaving only 'a mass of bare clay and stones.'

Erosion continued to cause Peninsula farmers short and long-term problems. Besides immediate damage – ruined crops, and blocked roads – erosion created prime habitat for weeds. Without reliable streams, farmers on the Peninsula lost the potential to regulate water supplies to stock, and pasture. This last problem has perhaps limited farming more than any other erosion-induced factor, for many areas face water-deficits in summer.

Forest clearance affected other species of the Peninsula – at all trophic levels, most detrimentally. Fire incinerated much more than trees; Aparata Renata recalled the ‘thousands – nay, even millions – of birds being roasted alive by the extensive fires, that can only be recalled by the old colonists, who will remember seeing the burnt bones of wood hens and large birds on the charred ground, while the smaller birds were reduced to ashes, with nothing left to speak of their existence and fate.’ Many birds still had sufficient habitat to survive, albeit in smaller discrete pockets of population. Though their numbers undoubtedly dwindled, there are few records of forest bird species disappearing from the Peninsula over this period. Aparata Renata did however note the disappearance of kaka (which had barely survived the 1850s) quail, weka and white herons in the early flush of local extinctions. He also recorded that several species had become much rarer.

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445 'Otago Peninsula After the Floods,' *Otago Witness*, 10 March 1877.
446 Huggett, "The Historical Geography of the Otago Peninsula", 96.
447 Aparata Renata, 'Something about our Native Birds,' *Otago Witness*, 22 March 1894, 50.
448 Aparata Renata, 'The Native Birds of the Otago Peninsula, Past and Present,' *Otago Witness*, 10 August 1910, 76. The lack of records is unsurprising given the settlers' priorities. Thus the *Otago Witness* reviewer of T. H. Pott's article concerned over the losses of native birds criticized Potts' worries, and noted that 'The quail is the only bird, valuable as an article of food, which has become scarce during the last few years.' *Otago Witness*, 2 July 1870, 4.
Probably the greatest losses to the biota — but the least noticed — were in the variety and abundance of microorganisms and invertebrates that had inhabited soils and forest litter. According to Edward O. Wilson, 93 percent of the animal biomass of rainforest is invertebrate. Few invertebrate species could escape fire, or adapt to pasture. The transformation of the Peninsula would have therefore exterminated thousands of species' populations, some of which were almost certainly endemic to the Peninsula. Of those invertebrates that could adapt, some, such as those settlers loosely grouped as 'caterpillars and grasshoppers', became pests that increasingly infuriated settlers in the late 1860s and early 1870s when there were widespread worries about the 'steady increase in the damage' done by these insects.

Losses in one species often meant (and more importantly continue to mean) declines in others. To give but a few brief examples of these entangled effects, the loss of kowhai (a tree targeted as we have seen for its durable timber) would have reduced the food supply of kereru, tui, and bellbirds, all of which became much rarer as settlement progressed.

Kowhai in turn needed tui and (to a lesser extent) bellbirds as its principal pollinators. Still stronger associations exist between plants that bear...
seeds within large fleshy fruits and the birds that disperse them. Most of New Zealand’s forest birds eat fruit as part of their diet, and about 70 percent of our 240 or so woody plants bear fruit suitable for dispersal by vertebrates.\textsuperscript{454} The loss of avifauna such as brown kiwi, weka and kokako (possibly also moa, and the parrots kaka, kakapo, and yellow-crowned and red-crowned parakeets) has left plants with large fruits almost exclusively reliant on kereru for seed dispersal.\textsuperscript{455} These plants include prominent Peninsula canopy trees such as miro and matai. Kereru are now arguably the most significant seed-dispersing birds in New Zealand forests, because of their ‘catholic diet, their mobility, and their widespread distribution.’\textsuperscript{456} Kereru can vary their diet (they have been observed feeding on the leaves of 41 native species), though they clearly prefer to focus on eating the leaves of particular plants, such as kowhai, or \textit{Coprosma} spp. and when in season focus on the fruits of miro.\textsuperscript{457} The settlers also singled out most of these larger tree species, and they rapidly diminished. They were very fond of pigeon too. Writing in 1910 Aparata Renata recalled that the kereru, ‘always a bird to move about for its food, visited the Peninsula in great flocks’ in the early 1860s. But by the late 1860s their presence was a notable event: ‘I heard about some being in a pine bush about four miles distant. After a days search I found two and shot them. From that time till last year I did not see or hear of any about.’\textsuperscript{458}

The speed at which the settlers destroyed habitat and introduced predators and competitors probably rendered most of these indirect effects irrelevant at the time: kereru were killed off long before their food supply was imperilled, and most kowhai were cleared before the long term effects of the loss of pollinators were felt. Aside from habitat loss, all of these birds were popular as game, and continued to be killed despite game laws protecting them. They were all prey for wild and domestic cats also, and at least one contemporary observer thought these predators were principally to blame.\textsuperscript{459} This is the conclusion reached by most modern scientific studies also: New Zealand’s biota has been remarkably resilient to even rapid changes in climate or

\begin{footnotes}
\footnotetext{454}{Clout and Hay, "The Importance of Birds as Browsers, Pollinators and Seed Dispersers in New Zealand Forests," 29-32.}
\footnotetext{455}{Ibid.: 31.}
\footnotetext{456}{Ibid.}
\footnotetext{457}{Ibid.: 28, 31.}
\footnotetext{458}{Aparata Renata, ‘The Native Birds of the Otago Peninsula, Past and Present,’ \textit{Otago Witness}, 10 August 1910, 76.}
\footnotetext{459}{Gillies, "Notes on Some Changes in the Fauna of Otago," 316.}
\end{footnotes}
topography that alter or destroy habitat. Populations of indigenous species have disappeared much more frequently in the face of the direct threat posed by other forms of life. Yet these effects are still important, for they greatly problematise how we can hope to maintain and regenerate species populations now, and in the future.

Finally however, it is important to remember that a few species thrived. Renata felt the bush wren and the fantail had maintained or even increased their numbers. He noted too that wax eyes (*Zosterops lateralis*) were ‘still plentiful’ and with a varied diet of insects and fruit coped with the change to grass and scrub better than others. Thus settlers had to endure their depredations on plums and currants. Renata was perhaps unaware that wax eyes were actually recent introductions, having been blown here from Australia but a few years before. As with insects, a few birds could adapt to a rapidly changing environment, probably as with wax eyes most often recent arrivals rather than Gondwanan relics, and again settlers sometimes found these birds bothersome. But most nominally pest birds were helpful as well as harmful; wax eyes, for example, were also known as the ‘blight-bird’, as amongst other things they fed on the aphis species that blighted settlers’ crops and fruit trees.

In 1873 an aphis (*Evicorye brassicae*) was noted damaging turnips and brassicas at Andersons Bay and Tomahawk, while what the settlers knew as the American Apple Blight (now known as Woolly Apple Aphid, *Eriosoma lanigerum*) had long since arrived, and had spread very rapidly, compelling the Provincial Government to issue an ordinance in 1861 fining settlers for not clearing trees of this pest. Nevertheless,
it ‘hung about the boughs like hoar frost’ on John Mathieson’s orchard trees in 1878. Other insect pests were noted more generically: at Andersons Bay and Tomahawk native insects such as ‘the grub’ (almost certainly the native grass grub, *Odontria striata*) and ‘caterpillars’ (probably native army worms (family *Noctuidae*)) ‘ravaged’ ‘a few acres’ in 1871. Around Portobello it was reported in 1874 that in the older clearings slugs (*Deroceras (Deroceras) leave (Muller)*) were increasing so fast that ‘it is almost impossible to raise sufficient vegetables for home use, and it is only by going further into the bush on new land, that sufficient can be grown’. This problem with an introduced pest had been present some time; in 1867 a settler in Portobello asked the Acclimatisation Society for introduced frogs to cure his slug infestation. As with weeds, many of the worst difficulties fauna posed to farming on the Peninsula were caused by introduced ‘pest’ species already adapted to the habitats settler farming created for them in the wake of forest clearance. The great exceptions were the few invertebrates that thrived on grass and which had their habitat massively enlarged. These included the larvae of the Porina moth (*Wiseana* spp., family *Hepialidae*), the larvae of various Crane Flies (family *Tipulidae*) and most importantly grass grubs, which in the south is the species *Odontria striata*. Lacking their usual predators and parasites, both grass grubs and porina reach much higher population densities in ‘improved’ pastures than they do in native plant systems.


‘The Crops, their Condition and Extent: Andersons Bay and Tomahawk,’ *Otago Witness*, 4 March 1871; 15 February 1873; ‘Chats with the Farmers: A Visit to Springfield, the Farm of Mr. John Mathieson, Peninsula,’ *Otago Witness*, 24 August 1878.


Fereday stated that the worst insect pests comprised five moths, two beetles and various aphides. See R. W. Fereday, "On the Direct Injuries to Vegetation in New Zealand by Various Insects, Especially with Reference to Larvae of Moths and Beetles Feeding Upon the Field Crops; and the Expediency of Introducing Insectivorous Birds as a Remedy," *Transactions and Proceedings of the New Zealand Institute* 5 (1872): 290-92. The worst aphides have already been mentioned. Fereday mentions only the introduced moth (*Sesia tipuliformis*), which attacks currants. Anthony Harris has tentatively identified the other moths (usually the larvae of which were the pest) as the Porina moth (*Weisana* sp. family *Hepialidae*) the larvae of which attacked pasture, cutworm and armyworm caterpillars (family *Noctuidae*), and the magpie moth (*Nyctimera annulata*). The beetles are the grass grubs (in northern New Zealand this is more commonly *Costelytra zealandica*).

The settlers’ fears that these pests would soon be an ‘evil’ of ‘the most alarming proportions’ proved largely transitory, with the marked exception of the grass grubs.471 For this they thanked the rapid spread of introduced insectivorous birds. During the 1860s, the European settlers had indulged a mania for importing species. This was done both privately, and through organizing government funded Acclimatisation Societies; the Otago branch operated from 1864. Most of its importations were of familiar species from Britain, but some settlers operating on their own account were prepared to experiment with almost anything.472 During the hey day of unquestioned introductions between 1869 and 1871, the Otago Acclimatisation Society received £500 per year from the Provincial Government. It employed Richard Bills to bring birds from Britain, and he returned several shipments of numerous species of small birds. Much of the introduced avifauna that thrives today about Dunedin stems from Bills’ introductions. They included (but were not limited to) starlings (*Sturnus vulgaris*), song thrushes (*Turdus philomelos*), blackbirds (*Turdus merula*), ‘hedge sparrows’ (actually dunnocks, *Prunella modularis*), house sparrows (*Passer domesticus*), chaffinches (*Fringilla coelebs*), goldfinches (*Carduelis carduelis*), greenfinches (*Carduelis chloris*), yellowhammers (*Embiriza citrinella*), robins (*Petroica goodenovii*), and a nightingale (*Luscinia megarynchos*).473 The Society also introduced a variety of Australian birds, most of which, with the conspicuous exception of the black swan now so prevalent in the region, failed to establish initially, and very few of which are common anywhere in New Zealand today (the spur-winged plover is increasingly widespread). According to G. M. Thomson, who was involved with the Society in its formative years, these also included magpies (*Gymnorhina tibicen*), the laughing jackass (*Tanysiptera* sp.), owls (*Tyto* sp.), land rails (*Rallidae* sp.), ‘wonga-wonga pigeons’ (*Leucosarcia melanoleuca*), quail (*Odontophoridae* sp.), plovers (*Charadiidae* sp.) and wax-bills (*Nochmia* sp.). Indian minahs (*Acridotheres tristis*) were also brought in.474

According to Canterbury settler scientist James Drummond, the need to check insects was the primary motive for importation, and a set of criteria was employed; the birds brought in ought to have been non-migratory, prolific breeders and, to cope with

471 *The Crops, their Condition and Extent* *Otago Witness*, 21 February 1874.
472 Star, "New Zealand's Changing Natural History," 60.
473 ibid.: 63-64.
winter, able to eat seeds in addition to insects. Yet, as Thomson notes, the motive for introduction in practise was often simply that ‘those who suggested them knew them or of them in Australia or the old country’. These often-thoughtless introductions reflected the early settlers’ perception, as expressed in the *Otago Witness*, that ‘to introduce birds, beasts and fishes into Otago was something like writing upon the blank page of a child’s mind’. Indeed, the motives for introduction were sometimes childlike: robins, for example, were introduced (unsuccessfully as it turned out) so as ‘to show in the reality to Otago children, what they have so often seen in their picture books’. Numerous robins were brought, all with their red-breasts – and all, therefore, male. The early acclimatisers were simply sometimes ignorant. Alexander Bathgate queried a member of the Otago Society’s over the wisdom of introducing the grain-devouring ‘harsh-voiced’ ‘green linnet’, knowing this was likely to mean in practise the greenfinch, only to be told the bird was a harmless and beautiful songbird.

Acclimatisation Societies have had a very bad press for a long time. It is worth remembering that though the introduction of British small birds had many unwelcome side effects, they do seem to have performed their primary intended role of checking the ‘blasting plagues of insects’. Peninsula farmers as elsewhere were delighted with the introductions of small (largely) insectivorous birds such as hedge sparrows, starlings, blackbirds, and thrushes. Many introduced species increased rapidly; by 1875 the Portobello and Broad Bay correspondent exclaimed that ‘Blackbirds, thrushes, linnets, and finches may all be seen and heard. Starlings exist in thousands’. Peninsula farmers approvingly noted large flocks of starlings feeding on larvae and grubs, and tolerated their occasional depredations on fruit crops.

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477 *Otago Witness*, 4 March 1871, 6.
478 G. M. Thomson, ‘Notes by the Wayside,’ *Otago Witness*
481 ‘The Crops, their Condition and Extent: Portobello and Broad Bay,’ *Otago Witness*, 21 February 1874; 20 February 1875; 18 March 1876.
482 ‘The Crops, their Condition and Extent: Portobello and Broad Bay,’ *Otago Witness*, 20 February 1875.
483 ‘The Crops, their Condition and Extent: Portobello and Broad Bay,’ *Otago Witness*, 18 March 1876.
These 'feathered friends of the farmer' were of clear economic benefit overall.\textsuperscript{484} Thus in 1876 the summary report on 'The Crops, their Condition and Extent' in the \textit{Otago Witness} attributed the freedom from insect pests that year, 'a source of great satisfaction' to the spread of imported birds.\textsuperscript{485} Later observers also attributed the decline on insect pests to such introductions. In 1870 Alexander Bathgate felt that the spread of an 'Elater beetle' (\textit{Conoderus exsul}) in Otago, which he thought had come in with grass seed, was 'a very strong argument (if any be needed) in favour of the urgent necessity for the introduction of British insectivorous birds'. He later described the effects of its larvae's depredations on the roots of the limited amount of grass then sown: 'it was no uncommon thing to see as English grass wither up in large patches as though scorched by fire'.\textsuperscript{486} Likewise, the spread of 'the great plague of aphis' was associated with a lack of ladybirds, of which only one species was then observed.\textsuperscript{487} By 1897 Bathgate noted, in the context of castigating the Acclimatisation Societies for failing to track the results of their introductions to 'preserve evidence of their own usefulness', that once the starlings became numerous such sights were a thing of the past. He also felt it was plausible that starlings had caused the disappearance of 'black hairy caterpillars' that had formerly made barley growing 'almost impossible' about Oamaru and the 'almost total disappearance' of grasshoppers and cicadas about Dunedin.\textsuperscript{488}

Finally, all Peninsula settlers were pleased with the efforts of the Acclimatisation Society, abetted by Larnach, to establish game birds on the Peninsula, who both released California quail (\textit{Callipepia californica}) there in 1875, while the Society also released pheasants as a matter of priority as early as 1865, which were still found on the Peninsula at the turn of the century.\textsuperscript{489} This was a significant part of the project to create a 'better Britain', free from the restraints of aristocratic privilege that had barred all but the elite from enjoying game animals like pheasant and deer.

\textsuperscript{484} 'The Crops, their Condition and Extent,' \textit{Otago Witness}, 20 February 1875
\textsuperscript{485} 'The Crops, their Condition and Extent,' \textit{Otago Witness}, 18 March 1876, 9.
\textsuperscript{486} Alexander Bathgate, 'Acclimatisation in New Zealand,' \textit{Otago Witness}, 5 August 1897, 54.
\textsuperscript{488} Alexander Bathgate, 'Acclimatisation in New Zealand,' \textit{Otago Witness}, 5 August 1897, 54.
\textsuperscript{489} 'Otago Acclimatisation Society,' \textit{Otago Witness}, 27 May 1865 4; 'Acclimatisation,' \textit{Otago Witness}, 3 July 1875; 'Acclimatisation,' \textit{Otago Witness}, 16 October 1875 6; G. M. Thomson, 'Notes by the wayside,' \textit{Otago Witness}, 21 September 1899, 21
But farmers were far from wholly pleased with the Acclimatisation Society, and would ‘never forgive them’ for introducing house sparrows (Passer domesticus) and ‘green linnets’ (actually as Bathgate foresaw the greenfinch Carduelis chloris), which joined parakeets in devouring the sown seed of crops and grasses, and attacking the grain crops long before they were ripe. Parakeets could be shot, but ‘linnets’ were harder to deal with. Farmers were forced to spend time guarding their crops, and often had to harvest early and hurriedly, hugely reducing the crop’s value. In 1881 John Mathieson, who led a long campaign against the small bird pest recorded his experience to date:

Two years ago there were a few linnets, which stripped a little of the grain and ate most of the turnip seed. Last year they ate the largest half of the grain and most of the seed turnips. This spring they went with most of the clovers and grain had to be sown extra thick to allow for what the birds would take. Turnip sowing was a vexation: they not only lifted all they could find, but pulled it up when braided; but by great perseverance with scares, &c., we saved some. They are now flocking on the grain, although quite green. I do not think we will be able to save any of it this year....Now if in two years they have increased so as to make us importers of our seed grain, horse and fowl feed, &c., and almost without turnip and clover seed, how will the province fare in a like time hence? It is surely time to ask, Is there a remedy? and what is it? and how can it be applied?

The next chapter discusses the remedies the Otago Peninsula settlers, led by John Mathieson, found for this clearly serious problem.

One of the worst introductions to Otago was of course the rabbit, brought in for food, sport, and perhaps nostalgia. The first record I have of their presence on the Peninsula dates from 1870, when they were already ‘thoroughly acclimatised’ above

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490 Star, "New Zealand's Changing Natural History," 64, fn.23.
491 'Chats with the Farmers: A Visit to the Farm of Mr. James King, Tomahawk, Peninsula,' Otago Witness, 3 May 1879.
492 'Chats with the Farmers: A Visit to Springfield, Farm of Mr. John Mathieson, Peninsula,' Otago Witness, 24 August 1878.
493 'Chats with the Farmers: A Visit to the Farm of Mr. James Patrick, Tomahawk, Peninsula,' Otago Witness, 9 March 1878; 'Chats with the Farmers: A Visit to the Farm of Mr. Alexander Mathieson, Tomahawk, Peninsula,' Otago Witness, 9 March 1878; 'Chats with the Farmers: A Visit to Springfield, Farm of Mr. John Mathieson, Peninsula,' Otago Witness, 24 August 1878; 'Chats with the Farmers: A Visit to the Farm of Mr. James King, Tomahawk, Peninsula,' Otago Witness, 3 May 1879.
494 Hargreaves, "An Historical Geography of New Zealand Farming before the Introduction of Refrigeration", 317-18. A column in the Otago Witness, 30 October 1863, 6, contained tender advice on how to feed and care for rabbits. Larnach seems to have been responsible for the introduction of hares, amongst other game. He released several onto his estate in 1873. See 'Acclimatisation Society Report,' Otago Witness, 12 September 1874, 4. He also released quail, and nightingales. 'Acclimatisation in New Zealand,' Otago Witness, 5 August 1897, 54.
Sandfly Bay, and had increased considerably ‘of late’. Wild cats, and a little shooting for the market and the table, were thought to keep their numbers down a little. The effects of rabbits were not yet pronounced on the Peninsula, but they soon were, infamously, elsewhere in Otago where landholdings were much larger.

Such problems with introduced exotic fauna helped generate an increased awareness that the New Zealand environment was not a blank slate that could be written upon at will. In fact, during the 1870s some settlers began to regret erasing quite so much of the life indigenous to Otago Peninsula. The next section discusses the germination of these attitudes.

8.5 The evolution of attitudes to the Peninsula Environment

In 1872 a writer to the Otago Witness recalled that, looking out over Otago Harbour towards the Peninsula, he would ‘muse on what we had come to, and what was to be accomplished, ere the beautiful wilderness stretched before us should blossom with the rose, and the conquest of art be complete over nature’. The following discussion elaborates on that theme, reflecting on the settlers’ attitudes to the progress of their transformation of the Peninsula environment.

For almost all settlers, there was no question that their efforts should be celebrated as progress – as the development of civilization via vanquishing the unruly elements of nature and harnessing and improving the land to make it profitable. There was in fact, already room to begin to mythologise the ‘wilderness’ that had existed prior. In 1865 the Otago Provincial Government employed a painter Nicholas Chevalier to produce scenic views that celebrated the beauty of their domain, and might entice emigrants. Chevalier produced this depiction looking out over Sandymount from above Sandfly Bay:

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495 ‘Rambles Round Dunedin: The Peninsula–Sandfly–Seal Point–Gull Rocks etc,’ Otago Witness, 24 December 1870. The first record of rabbits in Otago was made when Tuckett encountered them in 1844. It is very hard to document the spread of cats; only a very few scattered references are made to them. John McLay noted Thomas Robertson, who farmed at Tomahawk, had a ‘big yellow tom cat’, and one day found kittens in an old broadleaf. See McLay, "Reminiscences of John McLay," 40, 42.

496 Otago Witness, 16 March 1872, 16.
Chevalier’s painting is almost pure propaganda. Very soon after his arrival here in 1865, public pressure led to Chevalier’s appointment by the Otago Provincial Government, with a retainer of £200, to produce landscapes for exhibition in Australia and Europe. The Otago Witness recommended his employment as ‘a public work’ by which Otago’s ‘attractions as a beautiful and desirable land for settlement’ would be publicised by this ‘first introduction to the World of Taste’.

Chevalier’s painting romanticises both the landscape and its inhabitants. The Peninsula is portrayed as a picturesque wilderness, swathed in forest whose tropical luxuriance (note especially the kowhai blooming gold in the foreground and festooned with vines, and the generic ‘palms’ at centre right) is only highlighted by the narrow track cut through it. The Maori family on that track are completely fanciful figments: they do not appear at all in the preparatory sketch made for this work, and the man is dressed in ‘native’ clothing that had long since been discarded in the south.

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497 Nicholas Chevalier ‘Sandfly Bay, Otago’ 1879. 597 x 902 mm, oil on canvas, 1962/31, Auckland Art Gallery.
498 Otago Witness, 2 December 1865, 15.
499 Chevalier’s imaginative additions are revealed by a comparison of the more finished painting shown here with the preparatory picture ‘Sandfly Bay and Gull Rock, Nr Dunedin, 1865’ which preceded it. See
The Peninsula landscape was typically celebrated differently closer to home. Thus, in 1878 a visitor to the Peninsula gazed north along the Peninsula and celebrated the view before him: ‘[t]he hill slopes of the Peninsula, as far as the eye will carry, are bespangled with the cottage homes of industrious settlers’ The settlers’ goal was still to fulfil Burns’ prophecy, descrying ‘the lower-lying valleys...waving with the yellow corn and the pursuits of rural husbandry; the pretty farms, “the busy mile,” and the happy smiling cottages by the wayside or nestling amid the trees in some bosky dingle or sylvan dell’.

Figure 31: George O’Brien, View of Otago Heads and Port Chalmers from Signal Hill near Dunedin. 1866?

This ordered harmony of humanity and nature is most clearly evoked in the work of George O’Brien, who produced several Peninsula landscapes in watercolours during the 1860s and 1870s. Despite evident precision and exactitude, O’Brien’s visions of the Peninsula were far from photographic. Indeed, O’Brien’s serene scene in Figure 31 (above) departs from realism in several key respects. These imaginative re-

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Melvin Day, Nicholas Chevalier Artist: His Life and Work with Special Reference to His Career in Australia and New Zealand (Wellington: Millwood Publications) 1981, Plate 1.

500 Otago Witness, 10 August 1878.

501 The Reverend Thomas Burns to Captain John Cargill, 30 January 1847. See Ernest Northcroft Merrington, A Great Coloniser the Rev. Dr. Thomas Burns (Dunedin: The Otago Daily Times and Witness Newspapers Co., Ltd, 1929), 266.

502 George O’Brien, View of Otago Heads and Port Chalmers, from Signal Hill, 1866?, 219 x 494 mm, watercolour, Neg. #556, Hocken Collections.
orderings are highlighted when comparing this view with that painted from an almost identical perspective some six years later shown in Figure 32 (below). Both images clearly alter the shape of the land to suit O’Brien’s needs – Harbour Cone, for instance, is rendered as a gothic spire, rather than a rounded breast. But it is their differences which are perhaps most interesting.

Figure 32: George O’Brien, Otago Heads from Signal Hill. 1872

The first image is a serene landscape of limpid tranquillity, bathed in beautiful golden light, which presents a vision of a better world than that O’Brien could ever have looked upon. The Peninsula landscape was in reality ‘raw as only a half-broken frontier can be – a wasteland of scars dotted with stark, as yet unassimilated buildings.’ In the 1865 view, the landscape is virtually untouched: only a few

503 George O’Brien, Otago Heads from Signal Hill, 1872, 466 x 615 mm, watercolour, 1981/9/2, Auckland City Gallery.
crisply delineated fields in the vicinity of Portobello reveal the influence of settlement.

The 1872 picture adds a surveyor peering through his theodolite, to the foreground. He peers along the side of the harbour closest to us, displayed jumbled with rocks, and flanked in dense forest. Fittingly, the atmosphere in this picture is crisper, as we are invited to share in the surveyor's precise delineation of space. Across the harbour, we see the evidence of how the surveyor's work can transform landscape. In this view, the landscape in the same area that was shown as essentially untouched in 1862, is now a mosaic of crops, pasture and forest from shore to hilltop. This change was not wholly imagined. Peter Thomson (who founded the Dunedin Naturalists Field Club in 1871, and published accounts of his many excursions as 'Rambles around Dunedin' in the *Otago Witness* throughout the 1860s and 1870s) commented on viewing Harbour Cone in 1870, that:

Till within the last couple of years or so, it was one unbroken forest from base to summit, but the march of settlement has somewhat marred its beauty on the harbour side, as some large clearings have been made on it, reaching from the road to a short distance from the top. On the southern side, however, there has been much less clearing, although there too, it has begun, and the axe and fire are busy at work destroying the natural beauties of the locality.\(^5\)

Thomson confirms the increasing impact of settlement, and alerts us to a shift in O'Brien's celebratory vision. O'Brien was in fact a surveyor himself. But this is still far from a realistic view. It is, rather, a gaze fixed 'upon a future when man and landscape will again be in harmony.'\(^6\) Thus whereas the first view treats all of the landscape, being relatively undifferentiated by development, as worthy of attention, in the second view the undeveloped aspects of the landscape beyond Harbour Cone suddenly become quite out of focus: being untouched, they detract from the message. The focus on the idealised park-like landscape is thus more a reflection of the artist's developing vision of a landscape 'idyllically settled by men' than of actual change in the landscape.\(^7\) And O'Brien asks us to consider that the surveyor's gaze we follow

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\(^7\) Ibid.
into the landscape is the instrument by which a future world of order and harmony can be constructed.

In this light it ceases to be remarkable that O'Brien's contemporaries commonly criticised his work as an overly literal rendering of the landscape; one commented in 1876 on his view of 'Dunedin from the Junction' that:

[t]his painting is a remarkably accurate record of everything the eye could include at that date...Indeed, the beholder might with very little effort imagine himself on the spot with the view before him. This accuracy is, however, quite destructive of artistic effect, but a few centuries hence the record will prove interesting.508

Peter Entwisle suggests O'Brien's paintings made manifest the pervasive dream of settler society, a dream '[s]o mundane in fact, that it could be mistaken for reality... . His works show us not how New Zealand was, but how it might have been – if the optimism of the colonising Victorian could have been translated into complete and unblemished fact.509 This, in other words, is something like the landscape Burn's envisaged – of sylvan field, bosky dell, and not coincidentally, an obedient Christ-fearing flock. Not quite a few centuries hence, O'Brien's vision has proved 'interesting', but not at all as an accurate 'record' of the past, but in revealing the forms of the settler's dreams for a future landscape.

If O'Brien's vision, essentially one of improvement and the progress of civilisation represented by neat farms and (as in many of his other works) ordered townships, embodied the commonplace dreams of settler society, it is yet necessary to note the exceptions to this rule. It is important to correct the frequent assumption that all early settlers were at best indifferent to the native flora and fauna, or at worst, hated and feared the bush. I argue that by the 1870s some settlers were already having misgivings over the ways their activity had transformed the landscape of the Peninsula. This impression comes through very strongly from a few writers, largely older settlers who had witnessed and participated in the rapid spate of change, and now felt able to reflect on the meanings these changes held for them. They represent

509 Ibid., 11.
the hesitant emergence of a new sense of emotional engagement with and attachment
to the indigenous environment as it had been.\footnote{In arguing thus I am following in the footsteps of Paul Star, who has made precisely this argument for Otago generally. I am indebted to him for developing it in so lucid and comprehensive a form. The Peninsula does provide some fine examples of the 'counter-revolution' Star argues for. See Star, "From Acclimatisation to Preservation: Colonists and the Natural World in Southern New Zealand 1860-1894".}

The rise of concern for the indigenous environment is usually only traced to a much
later period, around the last decade of the nineteenth century. However, Paul Star has
demonstrated that it is clearly evident considerably earlier, even in the 1860s.\footnote{Ibid., 58; Star, "New Zealand’s Changing Natural History," 69.}

Annual reports from the \emph{Otago Witness}' correspondent from Andersons Bay and
Tomahawk provide perhaps the clearest exposition of the development of this view
within an individual. In 1873 he wrote ‘[T]he grass crop is making encroachments on
the bush every year. A short time longer and there will be no bush land in this
district.’ The next year he virtually repeated himself, reporting that ‘bush is fast
disappearing, and anon will be a thing of the past’.\footnote{‘The Crops, their Condition and Extent: Andersons bay and Tomahawk,’ \emph{Otago Witness}, February 15 1873, 15; February 21 1874, 5.}

In 1875 however he had this to say:

\begin{quote}
It is to be regretted that this magnificent forest which clad each spur and gully
of the Peninsula is fast disappearing. If the work of destruction goes on at the
present rate, in not many years hence few and faint traces of our indigenous
vegetation, as far as the Peninsula is concerned, will exist. While no one will
deny the necessity of the ground being cleared, many will deplore that the
scene once so picturesque is being so unthinkingly marred, and even
proprietors themselves may yet see and acknowledge that, even for personal
benefit, its process of extermination has been all too complete.\footnote{Ibid., February 20, 1875, 10.}
\end{quote}

As the forest and its fauna disappeared before their eyes at least a few, if not many,
deplored the marring of the picturesque view. As we have seen Peter Thomson had
aesthetic misgivings about the loss of forest; so too did Dunedin resident Alexander
Bathgate. In 1874 he reflected that clearings on the Peninsula:

\begin{quote}
are already too large and numerous for the beauty of the scene, but as the
settlers on the sunny slopes of the ‘Peninsula” doubtless study more the
growth of early potatoes than aesthetics, Dunedin must submit to lose in time
a little of its loveliness. But it will only be a little, for man the destroyer
cannot change the outline of the hills, nor wholly rob their sides of verdure.\footnote{Alexander Bathgate, \emph{Colonial Experiences} (Glasgow: James Maclehose 1874), 14.} 
\end{quote}
Settlers on the Peninsula, as opposed to naturalists like Bathgate and Thomson, obviously invested more in their crops than in an aesthetic appreciation of forested landscape. But as the *Witness'* agricultural correspondent revealed, this did not stop some Peninsula settlers feeling the loss of forest deeply. It is especially significant that he refers to it as ‘magnificent forest’ since settlers generally called it, more dismissively, ‘bush’. His sentiments sum up the twin sources of concern over deforestation. First, while the economic rationale for clearance was still universally accepted, precisely economic grounds generated concern that there was nothing to be gained by clearing bush from land unsuitable for farming, while unless more attention was paid to planting trees farmers would soon find themselves short of shelter for stock and fuel. Second, there were stirrings of regret at the loss of beauty as forest gave way to farm: the settlers were beginning to realise that reordering the environment to resemble a European landscape came at a cost.

A number of factors contributed to these new sentiments. The early settlers, as we have seen, had little or no emotional attachment to the indigenous environment, and an abiding affection for the familiar biota of ‘Home’. But experiences with rabbits, thistles, gorse, and other problematic introductions had qualified love of exotic flora and fauna. This is most clearly seen in the rapid reversal and disavowal by the Otago Acclimatisation Society over rabbits. The Society records unequivocally show that between 1866 and 1868 they received and distributed rabbits. But when angry letters began to be written to the newspapers condemning the Society for doing so, Chairman W. D. Murison felt compelled to deny the charges and demanded compensation, pointing out the Society required public sympathy and support.  

515 'The Crops, their Condition and Extent: Andersons Bay and Tomahawk,' *Otago Witness*, 18 March 1876, 9. The correspondent advised planting ‘the gullies and steeper hillsides, which are almost valueless for any other purpose’ with eucalyptus. This would provide timber for fences, many of which were already in ‘an advanced state of decay’. In 1877 another writer to the *Otago Witness* expressed similar sentiments about the suddenly ‘dry and barren’ appearance of land ‘so steep and rocky as to be quite useless’, and suggested establishing reserves where ‘natural beauties’ could be preserved. *Otago Witness*, 10 March 1877.

516 *Otago Witness* 27 August 1870; 3 September 1870. See Star, "From Acclimatisation to Preservation: Colonists and the Natural World in Southern New Zealand 1860-1894", 255-158 for discussion. Likewise, Neil Clayton has argued that ambivalence towards live fences arose in the 1870s, as farmers counted the costs of keeping gorse, in particular, under control. This attitude was slower to surface on the Peninsula. The Portobello and Broad Bay correspondent lauded the planting of live fences by several proprietors in 1875, arguing they were a ‘most decided and permanent improvement, as they will afford shelter to the insectivorous birds now being rapidly propagated, besides being more
The very rapidity of change was probably unsettling even for early settlers arrived from Britain. This may have contributed to a slowly building sense that there was a need for reflection, and a more considered approach to how and why environmental transformation occurred. As Eileen Soper later noted, the settlers world was a ‘habitat that must be continually altering – the natural demolished in order to give way to the civilized...whether she loved or hated the new land, no pioneer woman could be completely at peace while this process of destruction and reconstruction was taking place.’

By 1880 many settlers had either been born or grown up here. This was the only home they knew, and the only place they could love. As A. S. Thomson put it, ‘[e]very man loves the spot of ground he reclaims from the wilderness better than the place of his birth, and consequently the moral tie which binds the emigrant’s heart to his native soil is annually weakened.’ And as they grew older the settlers could reflect on the changes they had witnessed, and desire to see some wilderness yet unclaimed. There was perhaps more time for leisure for all, and a large proportion of the population now lived in urban environments such as Dunedin, and only ventured to places like the Peninsula as interested visitors. For them, the Peninsula’s forests and wildlife were key components of a landscape increasingly viewed for pleasure, not profit.

However, the prevalence of concern for the indigenous environment should not be over stressed. Literate observers with the luxury of time to ponder the meanings of environmental change were few and far between. And amongst many of those who could afford to care there was a fatalistic sense that New Zealand’s native biota – very much including ‘the Natives’, that is Maori – was doomed. The causes of the losses in native fauna were much debated during this period, but most suggestions tended to...
regard them as inevitable, a function of natural law rather than human action. There was no overarching concept of the ‘environment’ or of ‘ecosystems’ to guide scientific thought.\textsuperscript{521}

Several theories competed to explain why New Zealand’s biota was retreating in the face of settlement. Some thought native species were senescent ‘sport’ species that were dying out naturally regardless of European impacts; others blamed climate change, disease, or predation. Most commonly settlers simply believed that inferior native species, Maori included, would give way before civilisation. This doctrine of ‘displacement’ argued European species were superior competitors, and evicted natives when brought into competition with them.\textsuperscript{522} As Paul Star points out, none of these mechanisms drew a link between declines in indigenous biota and loss of habitat.\textsuperscript{523} When regret at the passing of native species was expressed, it tended nevertheless to be accepted, in Buller’s words, as ‘one of the inscrutable laws of Nature.’\textsuperscript{524} Thus, in 1869 when the even then very rare ‘stormy petrels’ were discovered on rocks of the Tomahawk coastline, the \textit{Otago Witness}’ plea was not that they be protected, but that some should be secured for posterity in the museum.\textsuperscript{525}

The settlers \textit{were} trying to scrutinize nature, and were keen to decipher her laws. The spread of notions concerning the ‘balance of Nature’ were significant in this respect. Some gradually recognised that many of the pest problems people now faced could be traced to their own influence.\textsuperscript{526} Humanity, argued Canterbury settler scientist R. M. Fereday, ‘[i]n his blindness, is ever breaking, or throwing out of gear, some wheel of the great cosmical machine, and disorder necessarily follows.’\textsuperscript{527} Fereday, an entymologist, illustrated his point with reference to huge increases in pest insects in

\begin{footnotes}
\item[521] For useful discussions of how this affected scientists’ conceptions of the transformation of New Zealand, see Ibid., 11-12.
\item[523] Star, "From Acclimatisation to Preservation: Colonists and the Natural World in Southern New Zealand 1860-1894", 60.
\item[524] See Walter Buller, Address by the President, Wellington Philosophical Society, \textit{Transactions and Proceedings of the New Zealand Institute}, 17 (1884): 443-446.
\item[525] ‘News of the Week,’ \textit{Otago Witness}, 11 December 1869, 14.
\item[526] Several of these leading figures – T. L. Potts, W. T. L. Travers, and R. M. Fereday for example – were settler scientists from Canterbury.
\item[527] Fereday, "On the Direct Injuries to Vegetation in New Zealand by Various Insects, Especially with Reference to Larvae of Moths and Beetles Feeding Upon the Field Crops; and the Expediency of Introducing Insectivorous Birds as a Remedy," 289.
\end{footnotes}
recent years, something he attributed to the loss of native insectivores and the spread of crops. This scientist’s solution, so common amongst his successors, was to solve problems associated with European settlement by bringing still more of Europe to bear; he argued for carefully introducing British insectivorous birds and predatory insects.\textsuperscript{528}

Thus ideas of a balance of nature provided a framework for considering the problems caused by settlement. They provoked a reassessment, but not a rejection of acclimatisation; the very consequences of early thoughtless introductions justified more importations. As Paul Star has argued, a misconception that undercut this reaction was that the pre-settlement environment was inevitably cast as a waste wilderness.\textsuperscript{529} Thus the *Dunedin Morning Herald* castigated people for complaining about the activities of the Acclimatisation Society. This only revealed their ignorance said the editor, for:

\begin{quote}
[t]he economy of Nature must be preserved in this as in other respects, if we would reap the benefits which it is the purpose of Nature to bestow. It may of course be said that we are actually interfering with this economy by introducing the birds of another clime in to New Zealand. But that is not the case. As long as New Zealand was a waste wilderness, the Native birds probably sufficed to keep the balance true. But no sooner did settlement begin than the balance was destroyed.\textsuperscript{530}
\end{quote}

The opinion that the indigenous biota was too weak and ineffectual to compete with the spread of civilization remained all too pervasive. As John Turnbull Thomson had a character muse in *Rambles with a Philosopher*:

May we not anticipate that the brown tussock will succumb to the white clover, and the flax to the gorse and broom – that the tui will give place to the sparrow, the kakapo to the partridge? And why should we sigh at these changes since they are the inevitable conditions of life and progress?\textsuperscript{531}

Similar positivist faith was shown even over the worst introductions plaguing settlers. The *Otago Witness* took the editorial line that nothing was wholly bad; even the rabbit could be called ‘God’s pioneer of settlement’. Readers were comforted with the prediction that ‘Young communities take these diseases as children take the measles,

\textsuperscript{528} Ibid.: 294.
\textsuperscript{529} Star, "From Acclimatisation to Preservation: Colonists and the Natural World in Southern New Zealand 1860-1894", 276.
\textsuperscript{530} *Dunedin Morning Herald* 21 April 1881. Cited in Ibid., 272.
\textsuperscript{531} Cited in Ibid., 85.
and get through all right after a feverish period and a drastic purge or two\textsuperscript{532}. The choice of measles as a metaphor ought to have conveyed quite a different message, given Otago's history with the disease – yet steady progress towards recreating European civilization, and in the process inevitably extinguishing the life indigenous, was still almost universally accepted as New Zealand's destiny. However, as we shall see in the final chapter, changing economic and environmental conditions in the 1880s and 1890s shook the settlers' faith in their preordained path.

\textsuperscript{532} Editorial, \textit{Otago Witness}, 1 May 1880, 5.
Chapter Nine

‘The whole face of Nature is altered’
1881-1900

If a Rip Van Winkle among naturalists could arise here, one who had known the natural conditions in 1849, and if he could be dropped down in Dunedin now, he would be astounded at the changes which had taken place during the interval in the aspect of Nature. A very large proportion of the indigenous flora and fauna has disappeared. The ferns and other delicate plants which formerly filled up the bush are nearly all gone, dried up and exterminated. The big trees have disappeared long ago. The undergrowth consists very largely of European plants, the birds are those of the old land, the whole face of Nature is altered.

G. M. Thomson ‘Notes by the Wayside’ 1899

9.1 Introduction: An age of improvement?

G. M. Thomson, who arrived in Dunedin in 1871, became perhaps the closest observer of environmental change in and around the city during the latter nineteenth century. He had a particular fondness for the Otago Peninsula, and never ceased to be astonished at the rapidity and scale of the transformation of the biota there. In 1900 he reflected on some of the changes he had observed around Tomahawk Lagoon, ‘a prettily situated sheet of water,’ when first he knew it, ‘surrounded at its upper end, with bush and scrub...fed by more than one perennial stream of clear water’. There he had used to go to gather specimens of ferns and insects, ‘not now to be got without rambling much further afield’. For now, he lamented, ‘the destruction of the bush has dried up the streams, and the poaching of cattle round its margins has converted part of the lake into a boggy swamp.’ Settlement had scarred the place, making it ugly save when viewed from a distance. Choosing his words with care, Thomson called upon the proprietors of the lands for a change:

Now that the age of destruction has passed, an era of improvement might well be inaugurated by the surrounding proprietors, and with a little care and some judicious planting, the spot might again be transformed into a place of beauty.\textsuperscript{534}

Here Thomson called into question the way the settlers on the Otago Peninsula had so single-mindedly approached hacking their farms from the wilderness. That labour was, of course, performed in the name of ‘improvement’; yet Thomson characterised it as a long saga of destruction. The age of improvement, he felt, had yet to begin.

Thomson’s suggested improvements were the introduction of white and yellow water lilies, the yellow flag and the yellow buttercup (\textit{Ranunculus lingua}), together with ‘many pretty marsh plants of temperate regions’. This was a call to make a garden of the lagoon, one that combined indigenous and exotic plants with a view to what would thrive and be beautiful. It was, then, a call to better tend to the ecology of this place which, as a habitat on the borderland between fresh and salt water was as Thomson realised, ‘an extremely rich repository of living organisms.’ Thomson’s vision was that of a man who had learned to be devoted to the diversity of the life of this land, and who rightly feared very little of it would survive the settler’s desire to make their land as productive as possible. This concluding chapter explores the evolving dynamic of settlement expressed in Thomson’s musings – the increasing tension between what settlers perceived as economic necessity – to remake the landscape – and the desire to feel themselves more at home with the actual environment they had been immersed in since their arrival on the Otago Peninsula.

The chapter takes the survey of economic, environmental, and cultural change on the Peninsula to the close of the nineteenth century. It first details the extent and character of increased settler economic activity by 1900, especially the evolution of intensive dairy farming as the dominant economic activity on the Otago Peninsula. The comparative economic decline of the Maori community is then outlined, and reasons for key contrasts in the intensity and nature of land use on the Maori and European sections of the Peninsula are advanced.

\textsuperscript{534} G. M. Thomson, ‘Notes by the wayside,’ \textit{Otago Witness}, 5 June 1899, 62.
In assessing environmental change the chapter initially focuses on the role of farming stock, in particular on the effects of dairy cows, which became an overwhelmingly dominant driver of environmental change over this period. Their preferences almost entirely determined which plants settlers grew and where, and which survived in the bush remnants that settlers retained to supplement their cows’ winter feed and provide them with shelter. The other major driver of ecological change was the introduction of a further suite of particularly fearsome predators – mustelids, and ship rats (*Rattus rattus*). Their arrival immediately transformed ecosystems by circumscribing and even excising a range of ecological niches, predating or displacing introduced animals such as rabbits and Norwegian rats, in addition to numerous indigenous species, especially tree-nesting birds, previously fairly safe from Norwegian rats, but not arboreal ship rats, and populations of the larger colonial sea birds.

The destruction of native birds was one of the most obvious, and certainly the most remarked upon, environmental change in nineteenth century New Zealand. But wholesale change had been so rapid, and so complete, that it was impossible for settlers to escape the knowledge that, as Thomson put it, in but 50 years the ‘whole face of Nature is altered.’ In dwelling on the meanings of these often unintended and unwelcome consequences of their quest to fashion a new world, both European and Maori culture began the slow and continuing process of coming to terms with what they had wrought of the Otago Peninsula, and their roles in its ongoing creation.

### 9.2 The Otago Peninsula transformed: ‘One large dairy farm’

In 1887 a resident recently arrived at Portobello described the Peninsula’s present industries as:

> principally of the bucolic type. The splendid grass produces excellent beef, and nearly all the settlers follow dairy farming. Whether it pays or not I am not in a position to determine; but at present I cannot help hearing universal grumbling at the low prices of products. Splendid butter is sent from here to town and brings from 4 1/2d per lb upwards. When I think of the extraordinary prices charged up country there seems to be a screw loose somewhere; so that the middlemen make
a nice profit by fleecing at both ends. Bacon, potatoes, oats, &c. which are usually
looked for in an agricultural district, are, I am informed, mostly imported from
Dunedin. If this is true, wholly or in part, I may be excused for wondering what
the Peninsula farmers are about. There is nothing in the soil or climate inimical to
the growth of cereals or vegetables. Why they are not more extensively cultivated,
I suppose, can only be excused on the score of difficulty. The country is, to put it
mildly, rough and timbered.535

What were the Otago Peninsula farmers about? As this bemused correspondent reveals,
Peninsula farming no longer sought to fulfil the yeoman ideal of a virtually self-sufficient
family farm, whose owners could not only make a living but also feed themselves, from
the diverse products of mixed farming. The Peninsula was instead dominated by
increasingly specialised farms, whose occupiers sought to produce a few key products for
market. By the 1890s most farms were well-established enterprises, and very clearly
defined patterns of production had developed, as shown below in Figure 33 (below)
depicting the occupations of landholders:

\[535 'Portobello,' Otago Witness, 2 December 1887, 17.\]
The data in this and subsequent figures is derived from a combination of two sources. The data on the state of each holding is contained in the ‘District Valuation Rolls 1897’, CAIH D121 83-90, Archives New Zealand, Dunedin Regional Office. These are the records provided by the valuation officers when visiting each property on the Peninsula. There are eight rolls, each representing a riding on the Peninsula (Otago Heads, Portobello, Broad Bay, Highcliff, Sandymount, North East Harbour, Andersons Bay, Tomahawk). The landholdings were originally mapped by John Huggett, and presented in John Huggett, An Historical Geography of the Otago Peninsula. MA, Victoria University, 1966. Huggett’s map was constructed by combining the records of title contained in the valuation rolls of 1897 with the cadastral map for the Peninsula of 1896. The maps presented here reproduce the landholdings as mapped by Huggett. The data therefore contain several potential sources of error or inaccuracy, of which the reader ought to be wary. Huggett’s map of the landholdings relies on accurately matching all of the titles recorded in the rolls with those shown on the cadastral map, as does my collation of all the data relative to each separate title into the conglomerate land holdings that were the actual unit of land worked by an occupier, in any combination of ownership and leasehold land. There are some discrepancies between the data in the rolls as collected by Huggett and myself. Because I chose to use Huggett’s map, and did not remap the holdings according to my interpretation of the data, which I retained, there were eight holdings with discrepancies between Huggett’s map of a holding the data I had accumulated relative to that holding. I have satisfied myself that on each occasion Huggett either missed or misinterpreted a relevant title record. However, I chose not to remap the holdings, as I had by this time committed myself to the use of Huggett’s map. Huggett’s map contains another error, in that it very slightly skews the northern Peninsula to the east. I used GIS matching to attempt to correct this, but it remains a slight source of potential error. The process of drawing the maps probably added many small inaccuracies; these are a function of the GIS mapping programmes. The largest source of inaccuracy however is that I was rather crude (and inexperienced) in collecting the area data.
Figure 33 shows all the areas of land that were occupied as what I have termed a ‘landholding’. Each landholding was a productive unit, occupied and worked by a particular farmer – as listed in the District Valuation Rolls of 1897. This holding could be (and generally was) comprised of a number of titles, some of which might be owned, and others leased. The analytic category is the actual area of production.

However, in some respects the categories used in Figure 33 are misleading, and require clarification. The Valuation Rolls use some categories of occupiers – ‘women’, ‘Maori’, Half caste’, ‘dairy factory manager’, various tradesmen – which do not tell us anything about how the land was being used. Larnach’s large dairy farm and estate above Broad Bay, for example, is prominent among the few holdings occupied by ‘women’, for Larnach, who was to commit suicide the following year, had entrusted his property to his wife to avert its seizure in the event of bankruptcy. \[^{537}\] Again, Walter Riddell, listed as a dairy factory manager, was actually running sheep on a large landholding leased on Okia Flat. The remaining Maori and half-caste occupiers were dairy farmers.

Most significantly, the category ‘farmer’ that dominates the Andersons Bay and Tomahawk ridings should be virtually, if not completely collapsed into that of ‘dairy farmer’. It seems this category discrepancy probably occurred because different people surveyed different ridings. This is revealed by the distribution of farm buildings associated with dairying shown in Figure 34, Dairy Farm Outbuildings 1897 (below), where the byres and piggeries of dairy farms are seen scattered across most land holdings labelled ‘farmer’ in Figure 33. The pattern of buildings in Figure 34, shows the standard requirements of the dairy farmer – always a byre and (usually) a piggery – while the lack of dairies in Tomahawk, Andersons Bay and Highcliff as compared with the outlying

relative to each holding, and rounded off each title to the nearest whole acre, rather than recording the area in acres, roods and perches. Where a holding incorporates several titles, such inaccuracies may accumulate (on the other hand, they may average out). Regardless, this unfortunate practise has introduced a significant element of spurious accuracy into the data presentation, whereby, for example, percentages of a holding’s grass cover are presented to an unjustified level of precision. Nevertheless, I think the maps remain useful representations of the state of each land holding.

\[^{537}\] ‘District Valuation Rolls 1897’, CAIH D121 83-90, Archives New Zealand, Dunedin Regional Office.
districts highlights the demarcation between farms close enough to Dunedin to be able to supply town milk and those forced to focus on making butter and cheese):

![Dairy Farm Outbuildings 1897](image)

**Figure 34: Dairy Farm Outbuildings 1897**

When all these factors are taken into consideration, some very clear patterns emerge from Figure 33. Other than the harbour side townships and a few government reserves, the Peninsula was now completely covered in a mosaic of dairy and sheep farms. Dairy farming was virtually the sole activity in the southern Peninsula ridings – Andersons Bay, Tomahawk, and Highcliff – and all along the harbour margin from Andersons Bay until Akapatiki Flat. There, as elsewhere on such isolated or poor land, such as the outer coast around Sandymount, on Okia Flat and Cape Saunders, and at Taiaaroa Heads, a small number of sheep farmers and graziers established much larger landholdings. A few of these – the Dickson brothers’ farm on Cape Saunders in particular – also ran fat cattle.  

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538 J.P. Huggett, "The Historical Geography of the Otago Peninsula" (Victoria University, 1966), 161.
On this difficult country only a thin cover of stock could be carried, at densities of little more than one sheep per acre.

This clear-cut division between dairying and sheep country is only slightly obscured by the fact that a few dairymen found sheep a useful adjunct during the depression. The success of the first shipment of frozen meat for England on the Dunedin in 1882 had given sheep farming on the Peninsula some impetus.539 But though sheep farming covered about 25 percent of the land area, the stock numbers show sheep farming was relatively economically insignificant. Twelve farmers carried 4654 sheep in 1881. By 1897, 22 farmers carried 7986 sheep on 6607 acres; in 1898, 16 farmers ran flocks totalling 9227 sheep.540 Yet the very next year sheep numbers crashed to 4007, and fell even further to 1,496 in 1901.541 This volatility probably reflected the fact that despite the enthusiasm generated by the export of frozen meat, most farmers could make much more money from their dairy herds. Other than actual sheep farms of the outlying districts most farmers had only kept a few sheep to tide them over the poor dairy prices of the 1880s and 1890s.542 When prices recovered, many sold off their flocks, so that in 1900 only ten farmers carried sheep.543

By comparison, cattle numbers were much more stable and much more significant, given that cattle are much larger animals requiring much more feed. Cattle numbered 4904 in 1881, and steadily increased to 6995 in 1900.544 Shifts in the breeds of cows kept also reflected the reduced importance of keeping dual purpose cattle for meat and milk. Ayrshires still dominated, but dairy cows were increasingly crossbreeds, with Alderney, and Shorthorn and Jersey stock becoming more significant.545 Few farmers kept any

539 It was reported that ‘The settlers here are quite jubilant over the result of the venture per ship Dunedin...and you hear of nothing but “mutton” talked of.’ ‘Portobello: From Our Own Correspondent,’ Otago Witness, 10 June 1882, 13.
540 Huggett, "The Historical Geography of the Otago Peninsula", 142-43, 60-64. Dept of Agriculture Report 1899 and 1900.
541 Ibid., 164. Dept of Agriculture Report
542 Ibid., 160-64.
543 Ibid., 159.
544 New Zealand Statistics; New Zealand Agriculture Department Annual Report 1900.
steers, save for those like the Dickson and Ryan families that ran beef cattle and sheep on poorer, steeper country.  

By 1900 an astonishing 90 percent of the Peninsula’s 200 odd farmers were dairymen, and even small property owners often had one or two cows. The Peninsula contained the highest ratio of cattle to other stock of any area in Otago. This was not quite a landscape of ‘milk and honey,’ for wherever possible its farmers had become single-mindedly devoted to the production of milk for market: their farms were highly specialised producers of dairy goods – milk or butter, sometimes cheese, sold at market to provide the farmers family capital with which to purchase their other goods and services.

And it is clear that the Peninsula farmers developed considerable expertise in dairy farming. They were market s, seeking to develop new products, new markets, and new modes of production. This form of farming was very much a joint effort between men and women. Men ran the cows that produced the milk; women transformed it into butter and cheese. Each became expert in their domain, and took great pride in the production of high quality dairy produce.

The reasons for the farmers’ specialised focus are largely explained by factors the correspondent cited: the generally poor prices for farm produce obtaining over these decades of the long depression, the difficulties in communication and transport which required the services of ‘middlemen’, and the roughness of the country (together with the small size of landholdings) which precluded growing extensive areas of cereals. All of these narrowed farmers’ options, so that monocultures for market became the economic, and therefore ecological, norm. Their real problem is summed up by a comment by one Henry Smythies, in one of series of essays on small farming run by the Otago Witness in 1881 to educate farmers on best practise in this environment:

In this country no rules can be adopted for the rotation of crops; markets are so fluctuating from various causes that farmers are obliged to grow such things as

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546 Ibid., 166.
547 Ibid., 165.
they can sell; land varies very much in quality, and artificial manure is not to be had, therefore farmers never grow such crops as are suited to the land.\textsuperscript{548}

The ecological concomitant was that much of the environment of the Peninsula became subject to the heavy ecological footprint of dairy cows, whose needs and habits determined which plants were grown and when, which resources were sought, and how, why, and where settlers permitted the indigenous biota to remain. Thus grass and fodder crops dominated the farmers’ fields, while small bush remnants were typically retained to provide cattle with supplementary winter feed and shelter, timber to fence them in, and firewood.

Dairying is a particularly intensive form of farming, and the Otago Peninsula is not well overly suited to running cattle. Its steep slopes and erosion prone clay soils make for difficult dairy country. But small farmers on the Otago Peninsula could meet daily demand for fresh dairy produce from Dunedin. Such market forces largely controlled farming practices. The growing dominance of dairying occurred against, and was partly explained by, a backdrop of severe and prolonged national economic depression, which lasted from 1878 to 1896. In 1878 the collapse of the Bank of Glasgow, which had invested heavily here, triggered a credit crisis, and because international prices for agricultural products remained very low the colony struggled to trade its way clear.\textsuperscript{549} The depression’s effects were worse in the south than the north of New Zealand, but the Peninsula farmers were buffered somewhat because they served a substantial local market. Even if the Dunedin market itself stagnated (between 1875 and 1885 Dunedin’s population increased by only 1,762 people) the Peninsula’s farmers could still stay afloat by selling dairy produce and thereby most, but by no means all, survived.

To be fair, most Peninsula farmers did still raise pigs as a way to find some use for their skim milk, and they did grow oats, though the overwhelming bulk of the crop was required for stock fodder and to feed horses. A noted, potatoes were not grown for market about Portobello, but only in some gardens for home use, as it was cheaper to buy than to

\textsuperscript{548} Herbert Smythies, ‘Small farming in Otago,’ \textit{Otago Witness}, 30 April 1881, 7.
They were in fact the only marketable farming crop now grown anywhere on the Peninsula in any substantial amount: the Peninsula still supplied much of Dunedin’s potatoes, early varieties being particularly sought after. Most were grown about Highcliff and Sandymount, by about 70 farmers in all. Obtaining a satisfactory price was a primary problem, hence the complaints about being forced to deal with ‘middlemen,’ in other words the grocers and shop keepers who marketed produce to the public. In 1890 the farmers attempted to band together, forming the ‘Peninsula Farmers Association’ in an effort to develop a more certain market, and a guaranteed minimum price. This association seems to have failed immediately, however.

Another example of how Peninsula farmers abandoned formerly diverse practices is fruit and vegetable growing. In 1882 a correspondent, having seen several farmers about Hoopers Inlet ‘going in heavy as orchadists’ and growing a lot of peach and other stone fruits, predicted that the Peninsula would become ‘one of our largest fruit-producing districts’. He was wrong. During the 1880s both fruit growing and market gardening by farmers fell away quite markedly. In 1867 settlers had devoted 147 acres to these pursuits; this had fallen to 110 acres (of a much larger farmed area) by 1890. The statistics suggest these activities did recover lost ground, reaching 251 acres by 1900, but this was in fact largely as a result of the growth of Chinese market gardens.

Yet orchards were still highly productive, described as ‘prolific in apples, pears, peaches, plums, and berries of all kinds,’ while vegetable gardens ‘grew abundantly’, still producing specimens of ‘a terrific size.’ Though birds (particularly blackbirds and thrushes) and insects troubled some, it was simply lack of demand that meant ‘year by

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551 ‘Harvest Prospects,’ Otago Witness, 10 February 1898, p14; Huggett, "The Historical Geography of the Otago Peninsula", 155.
552 ‘Peninsula County: No. 1.–Highcliffe: J. M.; No. 2.–Sandymount: B. M.; No. 4.–Sandymount: A.McK.,’ Otago Witness, 23 February 1884, 9. ‘Peninsula Farmers Association,’ Otago Witness, 27 November 1890, p6. Derwents and Kidneys (fluke and ashleaf) seem to have been the principal varieties, though ‘American early, pink eyes, cups’ are also recorded.
553 ‘Peninsula Farmers Association,’ Otago Witness, 27 November 1890, 6. At least, no mention of it is ever made again in the Otago Witness.
555 ‘Rambles in the Peninsula,’ Otago Witness, 1 April 1882, 7.
year, they have become more indifferent to cultivating fruit and vegetables in large quantities."\textsuperscript{556} The excess of fruit, for example, was often turned into wine, and highly thought of locally, but again 'being of Colonial manufacture there is no demand, and [it] is only used for home consumption'.\textsuperscript{557}

The only other significant land use over this period was market gardening, centred on Andersons Bay, and to a lesser extent Portobello, the two key points of access to the Dunedin and Port Chalmers markets respectively. Chinese dominated the market gardening about Andersons Bay, and indeed around Dunedin generally.\textsuperscript{558} The \textit{Otago Witness} describes Chinese growing a wide range of vegetables: cauliflowers, red and white cabbages, celery, onions, parsnips, turnips, leeks, lettuces, radishes, peas, beans and herbs. Their success was reportedly due to choosing fine flat land, and continuous and intensive gardening, based on making heavy use of horse manure (gathered for free from city stables), and large amounts of labour, including continuous 'stirring' of the soil, very extensive watering, and careful weeding.\textsuperscript{559} The \textit{Witness} admitted that the settlers had something to learn from the Chinese, who threatened to monopolise market gardening, but hoped, in vain, to drive them from the field by encouraging settlers to copy their techniques but use 'ploughs, windmills, and other improved contrivances' to save labour.\textsuperscript{560}

The large Chinese market gardens are shown on the southern headlands of Andersons Bay on the left of Figure 35 (below). This map also documents the mingling of suburban and rural development that had accompanied the intensification of farming on the Peninsula, and the growth of Dunedin. Notable features visible include the causeway

\textsuperscript{556} 'Rambles in the Peninsula,' \textit{Otago Witness}, 1 April 1882, 7.
\textsuperscript{557} 'Rambles in the Peninsula,' \textit{Otago Witness}, 1 April 1882, 7.
\textsuperscript{558} The history of Chinese on the Peninsula in the nineteenth century, as elsewhere in Otago, is not flattering to the European settlers, who tended to write about and treat them rather like unwelcome weeds. According to one observer in 1878 Chinese 'had tried to make a footing on this stronghold of European labour, but were "hunted" off.' \textit{Otago Witness} 10 August 1878, 6. At this point they were forced to buy their vegetables from European market gardeners on the Peninsula. In 1881 it was reported that '[F]or the first time in Portobello the Chinamen have succeeded in establishing themselves here. A number of them are being employed in clearing bush in the Native reserve, Cape Saunders.' \textit{Otago Witness}, 14 May, 18.
across Andersons Bay, with its bridge that had been inserted to allow ferry traffic access; the brickyards; the discrete nature of small patches of bush; the large residences such as Cutten’s, White’s and Scobie Mackensie’s, and the low density of housing on the subdivisions Oaklands, Shiel Hill, Craiglieth, Vauxhall, Grants Braes, and Waverley.

As Figure 35 (above) and Figure 36 (below) suggest, only the township of Portobello, which benefited from better ferry services, and some of Andersons Bay’s constituent subdivisions (Cranston, Silverton, Shiel Hill and Oaklands), expanded at all over these twenty years. Andersons Bay had become one of the city’s more fashionable outlying
suburbs, with a high proportion of professional or business executives, by 1900.\textsuperscript{561} Yet these richer residents often maintained large residences with substantial grounds, such as Cutten’s residence at Belmont on the southern headland above Andersons Bay (see Figure 35), and only small patches of housing broke up the semi-rural character of the landscape.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{population_by_riding_1881-1901.png}
\caption{Population by Riding 1881-1901}
\end{figure}

Excepting Portobello, the harbour side ‘townships’ nominally created by land speculation in the 1870s remained undeveloped. Population growth in all the other Peninsula ridings stagnated. As shown in Figure 36, in 1881 the population of Peninsula County was 2425; it peaked in 1891 and 1896 at 2701, before falling to 2561 in 1901.\textsuperscript{562} The stagnating population was largely in consequence of the fact that no major improvements to land transport were undertaken to better communications with the city, while elsewhere

\textsuperscript{561} Huggett, "The Historical Geography of the Otago Peninsula", 194-97.

\textsuperscript{562} Census data 1881, 1891, 1896, 1901.
transport costs continued to fall as the rail network flourished. A bridge to cross the Harbour between Waverley and Jetty Street in Dunedin was mooted in 1881, and remained under consideration for much of the decade, a Bill having passed through Parliament specifically to allow the raising of finance for it. The project was never begun: it was a prohibitively expensive exercise in a depression, and though it would have helped those at Andersons Bay (and Larnach to sell his sections at Waverley), it would have had only limited benefits for the majority of the Peninsula’s inhabitants.\textsuperscript{563} New technology did help: the first telephone was established in Andersons Bay in 1885, saving ‘many weary trudges into town for the doctor.’\textsuperscript{564} But at the turn of the century land transport patterns remained much as they had done in 1882, when a correspondent complained that ‘[t]he Peninsula railway has come to grief, the tramway hangs fire, the ferry-boat is laid up, and the bridge threatens a toll, so that the old devious path can alone be followed.’\textsuperscript{565}

Ferries therefore remained very important to maintaining the Peninsula’s economy. However only a few plied the harbour side routes during the 1880s – the \textit{Sappho}, renamed the \textit{Edina}, and the \textit{Kate} – and these struggled to provide more than an intermittent service.\textsuperscript{566} It was not until ferries brought to serve the 1889 Dunedin and South Seas Exhibition were left moribund that more regular and dependable services resumed. The two important ferries were the \textit{Onslow} and the \textit{Tarewai}. The \textit{Onslow} ended up in the hands of David Seaton, who as the previous chapter detailed already ran horse coaches between Dunedin and Portobello; throughout the 1890s he ran a regular and reliable daily service on the Dunedin – Macandrew Bay – Broad Bay – Portobello line through the week, with weekend excursions to allow Dunedin residents to wander about

\textsuperscript{563} See for example, ‘Communication with the Peninsula,’ \textit{Otago Witness}, 3 December 1881, 23; ‘A Rowdy Meeting at Anderson’s Bay,’ \textit{Otago Witness}, 2 July 1886, 8.
\textsuperscript{564} ‘Peninsula,’ \textit{Otago Witness}, 12 September 1885, 13.
\textsuperscript{565} ‘Rural Rambles. Peninsula,’ \textit{Otago Witness}, 25 November 1882, 27. The toll on the Andersons Bay causeway bridge referred to was instituted in 1887. Its charges indicate the sort of traffic then current along the Peninsula: wheeled traffic \textit{3d}, horses \textit{2d}, cattle drive \textit{1/2d} per head, sheep, goats or pigs \textit{3d} per 20 animals, and \textit{5/-} for every vehicle ‘propelled along the road by steam or light power including bicycles and tricycles.’ This last peculiarity stemmed from a fear that cyclists would frighten horses. See ‘Waverley Toll. To the Editor,’ \textit{Otago Witness}, 14 July 1892, 11. Minutes of the Portobello Road Board, quoted in Huggett, "The Historical Geography of the Otago Peninsula", 190.
the Peninsula. Over this decade the locally built Tarewai ran the alternative line between Port Chalmers and Portobello, allowing children from the Peninsula to attend the Port Chalmers District High School, and bringing doctors across from Port Chalmers to attend patients or deliver babies.

The other factor affecting population and property structure on the Peninsula was farm amalgamation. Elsewhere in New Zealand the great estates were being broken up to allow small farmers onto the land; but on the Peninsula the average farm size grew. Many of the small farms (11-50 acres) were amalgamated, and a small number of medium sized dairy farms and a few larger sheep farms developed:

![Figure 37: Landholdings 1878 and 1891](image)

The pattern of development suggested by Figure 37 is further illuminated by a comparison of the cadastral map for 1896, and the patterns of ownership and leasing

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567 McCluskey, *Down the Bay*, 80-83. Towards the end of 1899 a new timetable provided for twice daily trips between Portobello and Dunedin, six days a week.
568 Ibid., 90-91.
569 *Census of New Zealand*
revealed by the 1897 District Valuation Rolls. Figure 38 (below) shows that property parcels remained exactly as they had in 1878. The cadastral maps for 1878 and 1896 differ in fact only in that the latter also displays the property divisions established on the Maori land, usefully highlighting the difference in the shapes of these two different types of property.

This is also an apposite time to highlight, therefore, the patterns of leasing of land that had developed on The Peninsula. Figure 39 (below) distinguishes landholdings which were wholly owned by their occupiers, wholly leased, or a mixture of the two. It displays some clear patterns. Most obviously, the pattern seen in Figure 33 of the almost complete loss of control by Maori owners over their lands is strongly reinforced. Indeed, in the Papanui section of the reserve, where the Maori owners had weaker ties of occupancy, and which was very rough land only suitable for sheep, considerable areas of land had been sold. Successful farmers sometimes bought out their neighbours, though they more often chose to expand their holdings by leasing land. A majority of holdings in fact consisted of either wholly or partially leased land. Several large areas which had been designated as suburban subdivisions, including much of Tomahawk, and around Hoopers Inlet and the southern margins of Papanui Inlet, had instead become farms, and excepting those furthest from Dunedin in the most isolated positions (and so lowest in value) these holdings were generally formed by leasing land.
Figure 38: The Survey Districts of North Harbour and Blueskin, Lower Harbour West, North East Harbour, Upper Harbour West, Tomahawk, Sawyers Bay, Andersons Bay, Portobello Bay, Otago Peninsula and Upper Harbour East, 1896, 40 chains to 1 inch.
The ability of farmers to buy or lease ‘suburban’ or Maori land whose owners were unable or unwilling to work it was one factor in explaining why the farmed area on the Peninsula expanded considerably despite the difficult times. In 1880, just prior to the start of our period, close to one third of the Peninsula was used for farming – 7618 of 24,016 acres. Of this 6731 acres was sown grass, though the bulk – 5718 acres – was simply grass seed broadcast on burnt over but unploughed ground. Only 1013 acres of grass had been previously ploughed. The remaining 887 acres were ploughed cropland. By the close of the century another third of the Peninsula had been transformed into farm: 15,635 acres were in production, comprising 2915 acres of ploughed grass, 11,101 of unploughed grass, and 1619 of crops. The transitions between these are mapped in Figure 40 (below):

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571 Statistics of the Colony of New Zealand
Figure 40: Farmed Acres 1880-1900

Figure 40 reveals that the expansion of farmland into formerly forested areas increased markedly during, and because of, the deepening depression in the early 1880s. For during this decade many farmers resorted to the easiest and least labour intensive way to generate income: burning forest and broadcasting grass seed in the ash enriched virgin soil. The prevalence of this tactic is clear from the close relationships shown in Figure 40 between the rate of increase in acres in production and that of unploughed grassland, and the high ratios of unploughed to ploughed grassland. Burning forest to grow grass in this way obviously squandered the ecological and economic capital represented by forest and virgin soil, but struggling farmers could not often afford to saw and transport timber or prepare the land for the plough. Figure 40 also shows that by the 1890s the bulk of the accessible bush had been cleared, and the total area in grass had stabilized. Only then, as economic conditions slowly improved, were farmers able to focus on intensifying production, and the ratio of ploughed to unploughed land increased.

The way each farm managed its land towards the end of the century is revealed in the following figures derived from data in the District Valuation Rolls of 1897.

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572 Huggett, "The Historical Geography of the Otago Peninsula", 153.
573 Ibid., 151.
Figure 41 shows that for most farmers, agriculture was a minor preoccupation by area (though not by effort). Farmers closer to town unsurprisingly grew more crops, as they could access markets fairly readily. Elsewhere only the need to provide winter feed for stock drove farmers to plough for arable cultivation. Figure 42 (below) shows that oats (almost exclusively grown for chaff and hay) and increasingly turnips still dominated crop production, with carrots, rape and mangolds also grown in more limited quantities. Wheat and barley were now scarcely grown at all. Only potatoes were sold at market.
Rather than the mosaic of crops, grazing fields, orchards and gardens, that the settlers had arrived with, Otago Peninsula farmers now grew European grasses. As figures 43 and 44 (below) show, by the end of the century most of the Peninsula was swathed in sown exotic pasture. Most properties had well over four fifths of their area in grass, and other than the outlying properties, this was sown grass. The minor differences between the two figures below therefore reflect the existence of remnant tussock and low scrublands in areas such as Okia and Akapatiki Flats where sheep and a few cattle were grazed.

*Statistics of the Colony of New Zealand*
Figure 43: Sown Grass Area Relative to Acreage Per Landholding 1897

Figure 44: Percentage of Pastoral Land Per Landholding 1897
In fact, by now farming had essentially reached its limits. The following figures make it clear that most farmers had reached a point where it was difficult to intensify their farming further. Figure 45, showing the proportion of cleared land, shows that most farmers had now cleared the bulk of their land in the older and more established farming regions to the south and along the harbour side. Figure 46 (below) confirms that this cleared land was in production, as would be expected given that newly cleared and burnt land was generally extremely fertile. Some forest remained in these areas only because farmers with larger sections there often chose now to retain a little 'bush,' on steeper slopes, for shelter and winter feed for stock, and firewood and fencing for the farmer. Substantial patches of bush and tussock remained only in more isolated and newly settled areas such as Sandymount and Cape Saunders, where there were also areas covered in sand, scrub and swamp that were essentially useless for agricultural or pastoral purposes.

Figure 45: Acres of Cleared Land Relative to Total Acreage
Figure 46: Percentage of Unused Land Per Landholding 1897

The acreage of ploughed land was also approaching its effective limit of some 6,000 acres. By 1904 ploughed land totalled 5857 acres (4436 acres of ploughed pasture, and 1421 acres of crops).575

Figure 47 (below) illustrates why: it reveals that very few farmers’ holdings had a ploughable percentage of over 60 percent, and those that did often consisted of poor, sandy soils such as those on Okia Flat or behind Allans Beach.

575 Statistics of the Colony of New Zealand
As the dairying economy became established and matured, modes of production and distribution changed in order to ensure efficient collection and manufacture of a consistent product. In 1884 the Taieri and Peninsula Milk Supply Company was established to organise the hitherto haphazard milk distribution to Dunedin. Several Peninsula dairymen were prominent in the early shareholdings. More milk soon flowed into Dunedin than the city could ever consume, and in 1889 the Company installed butter and cheese making equipment to cope with the excess. The Highcliff factory had already changed to butter making in 1885, though it was not successful, and had ceased operations by the early 1890s. The New Zealand Dairy Supply Company also operated in the area between 1891 and 1896, collecting between 300 to 400 gallons of milk (morning and evening) from as far as the

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576 Huggett, "The Historical Geography of the Otago Peninsula", 144.  
577 Ibid., 144  
578 Huggett, "The Historical Geography of the Otago Peninsula", 174.
Heads.\textsuperscript{579} For a brief period in the late 1880s milk was also sent across the Harbour from Portobello to the short-lived Roseville Dairy Company factory in Sawyers Bay.\textsuperscript{580} By the 1890s, despite low profits, most Peninsula farmers had acquired shares in the Taieri and Peninsula Company, which repaid their faith in the last years of the nineteenth century, rapidly becoming the mainstay of the Otago dairy industry under the management of Walter Riddell.\textsuperscript{581} The Company boomed, paying consistent, if not spectacularly high prices for milk (in 1899 it paid 3d to 4.75 d per gallon for milk used for butter, and 4.5 to 6.75d per gallon for town supply milk), and regularly returned dividends of 8 percent to its shareholders.\textsuperscript{582}

During the latter 1890s the Company developed a network of creameries to which farmers took their milk each morning to be separated, before it was taken away to be made into butter at the central factory. For farmers, the advantage of the creamery was that they did not have to face the choice of making their milk into butter or transporting it to market daily. Consumers gained a more standardized and high quality product, since the bulk of the milk was converted into butter at the Company's large central factory in Dunedin. By 1897 four such creameries operated on the Peninsula, at Otakou, Granton (a putative township near Portobello), Papanui Inlet, and Sandymount.\textsuperscript{583} The latter was the largest of the creameries, at the heart of the dairying district. It was supplied by as many as thirty farmers and processed as much as 2000 gallons of milk daily.\textsuperscript{584}

Figure 48 (below) below shows farmers on their buggies bringing their morning milk to the creamery, a daily ritual at which district gossip circulated, farmers discussed their fortunes, and trials, and a sense of shared endeavour was generated. In a very real sense, the creameries fostered the knowledge that the success of each farmer

\textsuperscript{579} 'Otakou: October 16,' \textit{Otago Witness}, 22 October :891 p21; 'Portobello,' \textit{Otago Witness}, 5 November 1891 21. Most of the farmers at Otakou, more isolated than the rest, used this service. The carrying contract stimulated the beginning of organised passenger transport too: David Seaton taking people and their luggage in addition to the milk.

\textsuperscript{580} McCluskey, \textit{Down the Bay: The History of the Ferries on Otago Harbour}, 74-78; Huggett, "The Historical Geography of the Otago Peninsula", 169.

\textsuperscript{581} Huggett, "The Historical Geography of the Otago Peninsula", 145-46.

\textsuperscript{582} Ibid., 180.

\textsuperscript{583} The oldest of these was the Sandymount creamery, which opened in 1893. In 1903 a fifth creamery was opened at Highcliff.

\textsuperscript{584} Hardwicke Knight, \textit{Otago Peninsula: A Local History} (Broad Bay, Dunedin: The author, 1979), 96.
relied on his neighbours flourishing, for only communal good fortune would keep the creamery open.

![Image of Sandymount Creamery](image)

**Figure 48: Sandymount Creamery**

The creamery at Otakou shown in Figure 49 (below) opened in 1897, and handled 1200 gallons of milk every day during the peak of the season in 1899. A feature of the scene in this image is the combination of sleds and carts used to bring milk to the creamery. This highlights the difficulties faced by the Maori and European farmers seen here who sought to develop the land north of the boundary to the Maori 'reserve', which still lacked a formed road through to Portobello; the sleds were due to the swathes of sand, which made using any form of wheeled traffic utterly impossible in many places. Nevertheless, the *Otago Witness* reported that 'farmers are beginning to find the benefit of the creamery in their midst after having to drag their milk four miles along a soft beach.'

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585 Hardwicke Knight, private collection.
586 *Otago Witness* 23 November 1899, 34.
587 Huggett, "The Historical Geography of the Otago Peninsula", 178.
588 'Otakou' *Otago Witness*, 16 December 1897, p50.
9.3 Otakou: a world apart

The Maori at Otakou were now bound to the fortunes of the European economy. Access to their mahinga kai had been foreclosed by ever-denser European settlement and even kai moana was ‘only a welcome addition to the diet of a few of the aged and indigent.’\textsuperscript{590} But Maori were not well integrated into the wider economy. In particular, they continued to suffer from a lack of effective communications. The formed road did not even reach Otakou, halting at the edge of the Maori reserve, and leaving a walk of some kilometres from the road end to the kaik. Ferry services were extremely intermittent, largely excursions from voyeuristic Dunedin residents, often disappointed not to find ‘real’ Maori.

It is difficult to uncover what sustained the Maori economy during this period. It is clear however that land based production by Maori was limited. In 1891 four and a half acres were cultivated (two and a half acres in wheat, and two in maize), while 21... 

\textsuperscript{589} Hardwicke Knight, Private Collection.
cattle and four pigs were kept. In 1896 Maori cultivated 37 acres, and had sown 507 acres of grass. They had 26 sheep, 282 cattle, and 44 pigs. The 1901 census contains no economic data relating to Maori on the Peninsula. Most Maori found it hard to farm. Few had much land, and the lack of infrastructural development meant that the relative distance to market had greatly increased. The pursuit of the land claims was a significant financial burden. Those that did have land and the means to support themselves had to help those that did not.

Mackay's 1891 Commission recorded Teone Ratara's statement to this effect:

Teone Ratara had a large family, and only 10 acres of ground to support them on. He had very bad health, and was unable to work. The 10 acres of half-caste land was all he had, and that was situated in an out-of-the-way place where he could not cultivate it. No Government relief has been received in aid of the poor and indigent people. These people have been supported by their relatives, who could ill afford to do so...No person had sufficient land to maintain himself and his family. Several persons were unprovided for, and had to obtain work to get a living. In fact, everyone had to seek employment during the shearing and harvest seasons to procure money to purchase food and clothing with, as the land did not support them; and sometimes work was not obtainable.

The result was that Maori actually occupied very little of their land. The District Valuation Rolls of 1897 record only 164 acres occupied by Maori and 354 acres by 'half castes'. The remaining Maori land was leased to Europeans, to provide a limited income, pay for fencing on the land that was retained, and for the expense of pursuing their land claims. Taiaroa and his people, for example, had moved away from Otakou in 1881 to return to other ancestral land at Taumutu. Their land was then leased.

Those without land tended to drift away from the community, and their Maori heritage. This was easier for those with Pakeha ancestry, for they were more

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591 Alexander Mackay, "Middle Island Native Claims (Report by Mr. Commissioner Mackay Relating to)," (George Didsbury Government Printer, 1891), 10.
592 Ibid., G7, 44.
593 District Valuation Rolls 1897
594 Mackay, "Middle Island Native Claims (Report by Mr. Commissioner Mackay Relating to)," G7, 44.
readily accepted. Maori population figures for the period, as displayed in Figure 50: Maori Population of Otago Peninsula 1881-19012-1900 (below) seem quite unreliable.

![Maori Population Graph](image)

**Figure 50: Maori Population of Otago Peninsula 1881-1901**

In 1891 the census data seem especially dubious. That year only 22 Maori were recorded living on the Peninsula (with no half-castes). In 1896 71 Maori were recorded, including 46 ‘Half castes’. By 1901 87 of 92 Maori living on the Peninsula were of mixed ancestry.

Most settlers in New Zealand still believed that the Maori were simply destined to disappear, if not by dying outright then through amalgamation with the European population. This doctrine was not seriously disputed until after a succession of census’ beginning in the 1890s showed the Maori population clearly increasing.

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596 According to Durward, no proper census of the Maori was taken prior to 1906, previous figures being only more or less reliable estimates. See Elizabeth Durward, "The Maori Population of Otago," *Journal of the Polynesian Society* 42, no. 166 (1933): 51.
598 Ibid., 360-61.
Otago, where Maori remained all but invisible to most Europeans, this belief lingered long into the twentieth century.\textsuperscript{599}

The analogy between Maori and New Zealand's indigenous plants and animals had long been drawn to buttress belief in displacement. Even amongst Maori, the settlers argued, it was proverbial that they would disappear as the native rat had before the European rat, and, some went so far as to say, as the flax had before clover.\textsuperscript{600} Attempting to maintain this last example ought to have exposed the absurdity of arguing displacement was an inevitable law of nature. However, by the end of the nineteenth century, displacement was essentially a historical fact: the indigenous had been replaced by introduced species. But, just as with Maori, the plants and animals of New Zealand did not simply melt away, and allow themselves to be passively displaced: they were forcibly replaced.

\textbf{9.4 The environmental impacts of settlement 1881-1900}

In 1900 the Peninsula environment was radically different from that the Scots settlers encountered in 1849. Over most of the land, all the native species that had greeted the settlers of 1848 had been eradicated. The indigenous trees, shrubs, ferns, mosses and lichens were gone, replaced by the exotic flora still familiar today, dominated by grasses, clovers, and root crops, with a smattering of macrocarpa, pine, hawthorn, and gum trees, and numerous weeds. Most of the native birds were gone; many species had been eradicated, and almost all the survivors were diminished. The settlers' introductions of stock, birds, and mammalian predators dominated the vertebrate fauna. Even the insects were almost wholly different. From the soil up, the land had been remade in the settlers' image.

Only about 4,000 of Peninsula County's 24,016 acres was not occupied farmland or urban development. Of that, close to 3000 acres remained in bush, the remainder

\textsuperscript{599} Thus in the standard histories of Otago, McClintock's \textit{History of Otago} (1848) and Olssen's \textit{A History of Otago} (1984), Maori disappear from the story of the twentieth century.

being tussock. The vast bulk of the Peninsula land area – almost 75 percent – was devoted to European agriculture. Bush clearance had not yet peaked – by 1915 only 938 acres remained – but there were yet probably fewer trees on the Peninsula than there are today. This is certainly the impression gained from numerous photographs of entirely bare grassy hillsides.

Native biota was only retained in small fragmented patches. Something of the nature and extent of these are documented by the data in the District Valuation Rolls, mapped in Figure 51 (below). This shows there was a range of environments that farmers still struggled to use. They included sand, swamp, stoney ground, low flats (essentially estuarine salt marsh, or wetland), scrub, and tussock. These remnant environments almost exclusively persisted on the Peninsula’s outer coast.

Figure 51: Unused Land By Type 1897

601 In 1896 the Department of Agriculture’s Annual Report stated 2829 acres were still in native bush, with 1212 acres in ‘native grasses’. In 1900 the report stated that 3975 acres were in tussock, thus apparently conflating the area in bush with that in tussock.
602 Department of Agriculture Annual Report 1900.
603 Huggett, “The Historical Geography of the Otago Peninsula”, 149.
W.T. Neill’s extraordinary ‘Military Topographical Survey of Otago Peninsula, 1922’ based however on his 1901 survey reveals, among many other details, the exact distributions of remnant bush. Neill’s map confirms most farmers retained small discrete patches of bush on their property as a source of feed and shelter for stock. These patches are clearly evident scattered across the core dairying regions of Highcliff, Sandymount and Portobello. Larger areas of forest remained only on Maori land, in particular about the top of Mt. Charles, on Cape Saunders, and on the very steep slopes in the lee of Okia Flat. Generally Neill’s map also shows that bush tended to be left on south facing slopes, where grass would be difficult to grow, and where shelter was at a premium.

Figure 52: W.T. Neill, ‘Military Topographical Survey of Otago Peninsula, 1922’, 40 chains to an inch.  

604 W.T. Neill, Military Topographical Survey of Otago Peninsula, 1922, 40 chains to 1 inch, S07-520b, Hocken Collections.
However, stock had the run of all these areas, and would have exerted considerable influence on the structure and composition of the forest. Cattle and sheep prefer the softer ferns such as hen and chickens fern (*Asplenium bulbiferum*), and the broad-leaved trees and shrubs such as mahoe, three finger (*Pseudopanax colensoi*), seven finger, broadleaf, kowhai, kaikomako, raukawa (*Raukaua edgerleyi*), or marble leaf. But they will eventually remove almost all of the palatable vegetation from a forest understory – and there is little they will not eat, save perhaps the twiggiest coprosmas. Stock thus prevent regeneration, and open up and dessicate the forest floor, compacting the soil, lowering carrying capacity, and ultimatly removing habitat for species such as ferns.

Some native plants now disappeared completely, while very many more survived only in a few places. Data from the period itself is very scanty, but by considering it in conjunction with the pattern found today some reasonably informed guesses can be made as to the state of the vegetation. Peter Johnson has found historical records of 13 native plants on the Peninsula that are not found today, including four ferns, seven herbs, a sedge and two woody plants. Many more have long been rare. Thomson, for example, described in 1900 the disappearance of angelica (probably *Gingidia montana*, native aniseed, perhaps *Scandia geniculata*, climbing aniseed), known to the settlers as anise. This had been common about Andersons Bay but, as Burns had happily noted, it was very palatable to stock (rabbits also like it). Thomson noted that it therefore persisted only on the most inaccessible cliffs. It was noted in 1924, but has not been seen on the Peninsula since. This is a widespread pattern: of the 374 native vascular plants that survive on the Peninsula (just outnumbered by 331 naturalised and 48 planted species) 135 species, or 36 percent, are recorded from only one or two sites.

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609 Ibid.
610 Ibid., 10,13.
Thomson argued displacement was clearly the result of human activity: He used the Dunedin town belt as a test case. Here, he noted, though the larger trees had been excised, there had been no fire or grazing. He concluded that where the ground was not disturbed by man, introduced species were not able to spread to any great extent, with 'a few striking exceptions': cocksfoot (*Dactylis glomerata*) broom, gorse, and elderberry.

In contrast, Thomson realised, 'wherever roads or tracks have been cut and the ground disturbed, introduced species of plants have mainly taken possession of the soil.'

The creation of new environments caused the native fauna to struggle to adapt. Of the native avifauna, only parakeets maintained a sufficient population to cause the settlers problems by 1885, when they engaged in a 'new departure in wickedness' by eating the buds of plum trees. They did not last: in 1910 Renata reported that they had been extinct on the Peninsula for many years. Many other birds disappeared from the Peninsula in this period. Renata mentions the disappearance of mohua (*Mohoua ochrocephala*) and South Island robin (*Petroica australis*) amongst forest birds; white heron (*Egretta alba modesta*), brown teal (*Anas chlorotis*), paradise duck (*Tadorna variegata*), and pukeko (*Porphyrio porphyrio melanotus*) of the waterbirds; and dotterels (*Charadrius sp.*), snipe (*Coenocorypha iridalei*), gannets (*Morus serrator*), and fairy prions (*Pachyptila turtur*) of the seabirds.

According to Renata, many other bird populations diminished markedly, including tui, bellbird, and pigeon, brown creeper (*Mohoua novaeseelandiae*), pipit (*Anthus novaeseelandiae*), and morepork (*Ninox novaeseelaniae novaeseelandiae*) of the forest birds; grey duck (*Anas superciliosa*) of the waterbirds; as well as black backed gulls, red-billed gulls, terns, oystercatchers (*Haematopus finschi* and *H. unicolour*),

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612 Ibid., 35.
613 Ibid.
614 'Portobello: From our own correspondent,' *Otago Witness*, 22 August 1885, 14; 'Broad Bay,' *Otago Witness*, 31 October 1885, 12.
616 Aparata Renata, Birds of the Otago Peninsula Past and Present.
sooty shearwaters, erect crested penguins, blue penguins, and yellow-eyed penguins, Stewart Island shags, and spotted shags of sea birds. Renata concluded that

a summary of the birds that are extinct, nearly so, and increasing goes a long way to prove that all the native bird fauna of the Otago Peninsula is being sadly diminished. Very few species are holding their own, and practically none are increasing locally.

The cultivation of the open country, the destruction of bush to carry on farming on good soil, the sawing out of timber trees that bore berries that were the principal food of many of our birds, the devastation caused by extensive forest fires, the increase of stoats, weasels, ferrets, and other imported vermin (and perhaps more will be imported by those who only guess at results) must in the long run mean the extermination of all our native birds. Ocean wanderers will hold out the longest, but even some of these, like the penguin, must soon be a thing of the past. The native grey duck, when thoroughly protected, is about the only bird we can hope to see as plentiful as formerly in special localities....

Birds disappeared in part due to the cumulative pressure exerted by the loss of large areas of forest and wetland, the fragmentation of what remained into small patches, and competition for food from introduced birds. Once again however, predation was the primary cause of these population losses.

During the 1880s a suite of new predators arrived on the Peninsula. Ferrets (Mustela furo), weasels (M. nivalis), and stoats (M. erminea) were introduced to New Zealand in large numbers after a Parliamentary Joint Committee concluded in 1881 that the rabbit problem had become so dire that no other solution seemed viable. It is important to realize how controversial this measure was. Few settlers were as thoughtlessly flippant as ‘Tally Ho’, an Otago Witness correspondent, who argued in response to a Peninsula correspondent’s worries over rabbits and thistles, that the introduction of foxes, stoats and weasels would eliminate rabbits, while the resulting increase in horses for fox hunting would deal to thistles. The introduction of mustelids was a much debated and desperate last resort measure that ‘represented the victory of landholders’ desperation over scientific foreboding, and of income over the

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617 Aparata Renata, "The Native Birds of the Otago Peninsula Past and Present," (Hocken Library, 2001). I have transposed Renata’s names into those used today.
618 Ibid.
619 'Thistles and Rabbits: To the Editor,' Otago Witness, 5 June 1875, 5.
environment. In 1882 the Otago Acclimatisation Society decided, by the narrowest of margins, to refrain from spreading mustelids. They were soon more firmly convinced that their introduction was wrong. But of course, the damage was done – other individuals spread mustelids, which were protected species in the early 1880s.

Mustelids generally prefer to eat rabbits rather than birds, and they have fairly large ranges (today females of the smallest species, stoats, range over an average of 83 hectares on the Peninsula today, while male ferrets cover 163 hectares) so their numbers on the Peninsula may not have been particularly high. On the Peninsula at this time rabbits were only really problematic about Hoopers and Papanui Inlets and, especially, Sandymount, where in 1884 they were described as ‘increasing’, their ‘depredations unlimited’ controlled with guns, dogs – and ferrets. Elsewhere, they had ‘never attained to anything like a pest’; the closely settled settlers were able, with ‘the assistance of plenty of good cats, to keep bunny in subjection.’ Rabbit numbers only exploded in the twentieth century, once land holdings became much larger. Nevertheless, in 1886 a rabbit inspector was appointed to the Peninsula for the first time.

Mustelids must have had considerable impacts on the avifauna for they are terribly efficient predators, pure carnivores that primarily hunt at night by scent. Few of New Zealand’s birds have any defences against them. They must have been at least partially responsible for dramatic decreases observed in several bird species on the Peninsula. In particular stoats would have had devastating impacts on the Peninsula’s

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620 Paul Star, "From Acclimatisation to Preservation: Colonists and the Natural World in Southern New Zealand 1860-1894" (PhD, University of Otago, 1997), 314.
621 For discussion, see ibid., 314-29.
624 ‘Portobello: From our own correspondent,’ Otago Witness 22 August 1885, 14; ‘Peninsula County: Highcliffc,’ 23 February 1884, 9; ‘Peninsula County: Portobello,’ 23 February 1884, 9
625 Brian Clearwater recalls 16,000 rabbits were trapped on Mt. Charles one winter when he was young, in the 1940s or early 1950s. Pers. Comm. 24 April 2007.
626 ‘Broad Bay,’ Otago Witness, 4 June 1886, 14.
populations of hole-nesting forest birds such as mohua and yellow-crowned parakeets.\textsuperscript{627} Ferrets perhaps posed the greatest threats to colonial sea birds. Renata recorded penguins once bred in thousands, especially on Cape Saunders, but he now believed there were only a few score.\textsuperscript{628} Most importantly, mustelids slaughtered sooty shearwaters (\textit{Puffinus griseus}).\textsuperscript{629} In 1910 Renata noted that these shearwaters formerly ‘bred in hundreds of thousands from Tomahawk Cliffs, along the steeps of Highcliff (which is 800 ft high), about Seal Point, Sandfly Bay, Sandymount, Cape Saunders, Papanui Inlet, and as far as Pipi Kariti [sic] near Cape Saunders. The sandy soil about Sandymount was their favourite breeding ground. A few still breed there.’\textsuperscript{630} The traveller was once continually breaking through into their burrows. Renata lamented that ‘the flocks about the coast here are certainly nothing to what they were a quarter of a century ago’, attributing this decline to the clearance of bush, but most importantly to the fact that “[t]he stoats, weasels, ferrets, and polecats destroy these birds by thousands’.\textsuperscript{631} Recent studies have confirmed that sooty shearwater colonies appear to persist despite changes in habitat, but not with prolonged predation from mustelids, cats and rats.\textsuperscript{632} Though they are the largest and most aggressive of New Zealand’s shearwaters, they share with the other petrels physiological and behavioural traits that render them quite vulnerable: they have a strong, musky odour, they nest in burrows, lay but one egg, and most leave the egg and chick for long periods to feed.\textsuperscript{633}

Prior to the decimation of their colonies recorded by Renata, sooty shearwaters were the last seabird species to breed here in anything approximating their former densities. The loss of shearwaters represented a massive decline in bird biomass. As stressed in part one, the sheer numbers of petrels, and their habit of nesting in burrows in huge

\begin{thebibliography}{99}
\bibitem{jones2000a} Jones, "Sooty Shearwater (\textit{Puffinus Griseus}) Breeding Colonies on Mainland South Island, New Zealand: Evidence of Decline and Predictors of Persistence": 327.
\bibitem{worthy2002} T.H. Worthy and R.N. Holdaway, \textit{The Lost World of the Moa} (Christchurch: Canterbury University Press, 2002), 441.
\end{thebibliography}
colonies meant that they influenced the terrestrial environment more than any other group of vertebrates. They did so by underpinning the base of the terrestrial food chain, transferring immense amounts of nutrients from the sea to the land that increased soil fertility, plant growth, and hence sustained the plenitude and diversity of all forms of terrestrial life from invertebrate populations up. The scale of nutrient input in and around colonies was truly enormous and prolonged – in the order of hundreds of kilos of nitrogen and phosphorus each year for hundreds, perhaps thousands of years. Only a few petrels still cling to mainland shores (there are remnant colonies of sooty shearwaters at Taiaroa Head and north of Allans Beach on the Peninsula). Their absence has greatly simplified and distorted the ecological webs that sustained the evolution of New Zealand’s flora and fauna. For much of the nineteenth and twentieth century farmers have maintained soil fertility and supplied key nutrients by simply replicating their role – by importing and distributing the residues left by seabirds elsewhere.

The loss of this last substantial element of the ecological links between ocean and land once provided by large colonies of seabirds seems symbolic of the broader intent and effects of European settlement. Owning and occupying parcels of land involved extracting it from its embedded ecological context via a range of ideological and material processes. Land was first perceived as pieces of property, created by the processes of surveying, planning and mapping. Such pieces were then demarcated in ways that made their boundaries potent ecological divides, by defining where human energy was expended in exercising control over other species, especially their stock. Settlers therefore tended to be blind to the ecological influences, benign as in the case of sea birds, for whom such boundaries were invisible.

Nowhere is this clearer than in the impact of another newly arrived predator, the ship or black rat (Rattus rattus). By the mid-nineteenth century ship rats had displaced Norway rats from shipping, and once here did the same over most of New Zealand’s
land mass.\textsuperscript{638} Though smaller than the Norway rat, they are more agile, and readily climb trees.\textsuperscript{639} Thus it was probably ship rat and stoat predation of eggs, chicks and adults that extirpated or reduced Peninsula populations of several species of smaller tree-nesting birds such as the robin, brown creeper, and tomtits, while also reducing the numbers of bellbirds and tui.\textsuperscript{640} Some introduced birds flourished. Blackbirds and thrushes for example cope with rats and cats better than native birds, and in their absence had an abundance of food.\textsuperscript{641} The trend towards introduced flora and fauna dominating the biota therefore accelerated. Rats thus profoundly shaped the ecosystems of the Peninsula – but their nocturnal and silent slaughters never disturbed the settlers, for they did not affect in any way the mechanisms by which farmers gauged their control – their fences, their stock, and their plants.

As the Peninsula became closely settled farmers were able to more effectively control some of those species that did disturb them. Linnets, for example, were still present but were no longer a problem by the end of the century. Settlers had decimated their numbers by a variety of means. John Mathieson, whom as we have seen took a particular interest in the problem, began his experiments by watching for them from a window, drop line in hand, and netting them when a good kill was in the offing. He demonstrated his success in killing several hundred linnets and sparrows to colleagues on the Peninsula Agricultural and Pastoral Society and so impressed them that they agreed to subsidise buying three more nets.\textsuperscript{642} But a more effective and less labour intensive method of killing birds was soon resorted to: the spreading of poisoned grain.\textsuperscript{643} This rapidly eliminated linnets, especially once the Road Boards organised

\textsuperscript{638} The timing of its arrival is uncertain. Atkinson states that it was not recorded as present in southern New Zealand until 1894. Given the uncertainty, it is probably safest to assume it had arrived a little earlier. For discussion of the spread of ship rats in New Zealand, see I.A.E Atkinson, "Spread of the Ship Rat (Rattus R. Rattus L.) in New Zealand," \textit{Journal of the Royal Society of New Zealand} 3, no. 3 (1973).

\textsuperscript{639} Wilson, \textit{Flight of the Huia}, 137, 82.


\textsuperscript{642} 'Peninsula: Otago Peninsula Agricultural and Pastoral Society,' 2 September 1882 p12.

\textsuperscript{643} I am not sure what poisons were used, though W. Sanderson informed the Otago Peninsula Agricultural and Pastoral Society of his success using strychnine in 1881. See 'Otago Peninsula Agricultural and Pastoral Society,' \textit{Otago Witness}, 19 March 1881, 12. Phosphorus was used as the poison to treat grain for rabbit control. In 1884 a Sandymount correspondent noted that small birds were doing less damage, 'as most farmers have resorted to dressing the seed'. 'Peninsula County,' \textit{Otago Witness}, 23 February 1884, 9.
the purchasing and distribution of poisoned grain from the early 1890s. Sparrows however, according to the infuriated farmers, were able to distinguish the clean grain, and they seemed to one local observer to have largely superseded linnets by 1885. Their depredations were as bad as ever: 'if no action is taken we may almost as well stop sowing any crops whatever. They destroy all crops except potatoes, and they may even attack them soon.' Boys had always been encouraged to destroy these birds' eggs; from the spring of 1897 the Peninsula Road Board began to pay them a bounty of 2s per 100 sparrow and linnet heads or eggs. By the end of the century, it was felt these practices had had good effect, and that the small bird nuisance was not 'quite so bad'.

The farmers' could clearly exert influence, but the ecology was far from under their conscious control. First, some species were simply too well adapted to colonising the disturbed ground farmers were in the business of creating for any control to be effective. Easily the worst such weed in this period from the farmers' perspective was the Canadian thistle (Cirsium arvense). In 1890 a Witness correspondent recorded this thistle was probably first noticed in Otago 'about a score of years ago' when a few specimens were found 'growing on Mr Sanderson's ground, close to the Tomahawk lagoon'. By 1890 it had moved far down the Peninsula, seemingly spreading along the Andersons Bay roadside. This thistle still plagues farmers on the Peninsula and in southern New Zealand generally. It is particularly difficult to control because it spreads naturally both by wind blown seed and by sprouting from long rhizomes, all of which must be removed since any part can propagate new plants. It also became a common – even ubiquitous – element in agricultural seed. By 1888 three Peninsula farmers appeared before the Peninsula Road Board to urge the necessity of Parliamentary action, as the thistle was 'becoming an intolerable evil and threatening in a few years to render the district uninhabitable.' Though the Road Board resolved to petition the Government, write to their MP William Lambach, and

644 'Portobello,' Otago Witness, 10 July 1890, 19; 'Peninsula Road Board,' Otago Witness, 11 June 1891 p13; Portobello Road Board,' Otago Witness, 30 June 1892, 21.
645 'Broad Bay,' Otago Witness, 31 October 1885, 12; 'Peninsula Road Board,' Otago Witness, 11 June 1891, 13
646 'Portobello,' Otago Witness, 10 July 1890, 19.
647 'Peninsula,' Otago Witness, 23 December 1897, 30.
648 'Harvest Prospects,' Otago Witness, 10 February 1898, 14.
649 Otago Witness, 20 February 1890, 7
650 'Peninsula Road Board,' Otago Witness, 9 March 1888, 16.
coordinate with the Portobello Road Board, nothing was done by way of legislative compulsion until the hotly contested Noxious Weeds Act of 1901 was finally pushed through after protracted debate.\footnote{For discussion see, Neil Clayton "Weeds, People and Contested Places: Selected Themes from the History of New Zealanders and Their Weeds 1770-1940" (University of Otago, 2007), 264-85.} In the meantime, farmers struggling with the depression often found it too much trouble to attempt to control these thistles, which needed persistent weeding and fallowing, both highly problematic on the hilly Peninsula. For similar reasons, gorse hedges were also spreading, and the Road Boards often required farmers to remove it from roadsides.\footnote{For example 'Peninsula Road Board,' \textit{Otago Witness}, 9 March 1888, 16.} This obviously did little to slow the spread of gorse over the bulk of the land.

Second, even where farmers successfully targeted a species, as in the case of linnets or rabbits, their actions might have significant unintended side effects. For example, other birds besides linnets could not distinguish poisoned grain. Many of these were valued. Poisoned grain eradicated weka from the Maniototo, where Otakou Maori had sought them annually. On the Peninsula it killed pheasants, partridges and quail, the principal game birds the Acclimatisation Society had tried so hard to import. Mustelids also took a terrible toll on game birds.\footnote{G.M. Thomson, \textit{The Naturalisation of Animals and Plants in New Zealand} (Cambridge: Cambridge University Press, 1922), 116. Thomson and Bathgate both stressed that the survival of introduced species was difficult to predict: the history of acclimatisation saw many more failures than successes. Thomson, \textit{The Naturalisation of Animals and Plants in New Zealand}, 114; Alexander Bathgate, 'Acclimatisation in New Zealand,' \textit{Otago Witness}, 5 August 1897, 54.} According to G. M. Thomson, by the turn of the century only the quail lingered, in but a few areas, including the Peninsula, where (perhaps because he associated poisoned grain with efforts to control rabbits) he wrongly thought no poisoned grain was spread.\footnote{G. M. Thomson, 'Notes by the wayside,' \textit{Otago Witness}, 21 September 1899, 62.} Nevertheless, in 1893 quail were ‘very numerous in patches of bush’ (and annoyed settlers by eating grass and clover seed); they were still seen in numbers on the lower parts of the Peninsula in 1897.\footnote{‘Aparata Renata,' \textit{Rural Rambles: The Otago Peninsula,' Otago Witness}, 3 August 1893; Thomson, \textit{The Naturalisation of Animals and Plants in New Zealand}, 125.}

Similar failures in acclimatisation occurred with efforts to stock the Tomahawk lagoon with introduced trout and perch. These provided Dunedin anglers with local sport for a time, but succumbed to the accumulated effects on the lagoon of clearing
the forest from the surrounding hills. These were described by notable Dunedin naturalist G. M. Thomson, who first saw the Tomahawk lagoon in the 1870s. In the early twentieth century he described what had happened since:

its beauty has given place to an appearance of desolation and mud. Only a few years ago it was surrounded by a fine bush, and its waters were clear and sparkling, but the clearing of the ground has dried up the little streams which formerly kept up its supply, and now when heavy rain does come on, mud and clay are washed into it in quantity, and it is silting up in all parts.

He noted also that the ‘the poaching of cattle has destroyed much of the original flora’ about the lagoon, and had ‘converted part of the lake into a boggy swamp’. Similarly, Aparata Renata in the early twentieth century lamented the fate of the ‘the big creeks [that] joined the bays and inlets’ (referring to Tomahawk, Hoopers Inlet, and Papanui Inlet), where Paradise, grey and teal ducks were plentiful. None of these creeks are much more than periodic trickles today: their paths have been clogged by soil, and pugged by cattle and sheep, so that they are seeping bogs.

In summary, most of the Peninsula was now subject to the farmers’ best efforts to exert control over their land. Burning, ploughing, and grazing stock, combined with predation from the ‘portmanteau biota’, had caused almost all elements of the indigenous biota to either diminish or disappear. But farmers struggled to dictate the composition of the flora and fauna that replaced them.

9.5 Ideological change: at home in a newly made land?

After witnessing the dramatic environmental changes experienced upon the Peninsula during the closing decades of the nineteenth century Aparata Renata closed his paean to the disappearance of native birds from the Peninsula by noting that ‘[t]he passing generation misses a lot of our beautiful birds, but the rising one cannot feel the want

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657 Thomson, "Botany," 46.
658 Ibid., 45.
660 Aparata Renata, ‘The native Birds of the Otago Peninsula, Past and Present,’ Otago Witness, 10 August 1910, 76. See also Ibid., 109-10 for discussion.
of their presence so keenly.'661 Renata was obviously well ahead of his time in the depth of his concern for the birds of the Peninsula. Yet his conclusion points us towards two significant facts about his contemporaries. First, that many of the older settlers of the nineteenth century mourned the loss of life they had witnessed, and in large measure caused. Second, that the next generation, born after the period of bush clearances, were less likely to share these sentiments, for their causes lay outside their experience.

Historians tracing the rise of environmental awareness in settler New Zealand have identified a steady and incremental increase in the distribution and intensity of concern.662 Some, such as David Young and James Beattie, have also argued that Scots in New Zealand may have been more aware of the problems associated with environmental transformation, and more inclined to pay heed to ways in which settlement could be gentled.663 This stemmed not only from the deforestation associated with the enclosures of Scotland, but also the highly educated character of many Scot emigres. This certainly applies to several of the keenest observers of ecological change on the Peninsula and about Dunedin such as G.M. Thomson (1848-1933), Alexander Bathgate (1845-1930), and Robert Gillies, all highly educated Scots.

More attention should also be paid to the intra and inter generational differences Renata’s conclusion hints at. The overwhelming majority of the early settlers arrived to settle areas such as the Peninsula in two cohorts – young parents and their children. The latter, in particular, only really knew New Zealand, and the period of the most profound ecological change about Dunedin coincided with their journeys from exhilarated youths to reflective old age.664

663 David Young, Our Islands, Our Selves (Dunedin: University of Otago Press, 2004), James Beattie, "W.L. Lindsay, Scottish Environmentalism and the 'Improvement' of Nineteenth-Century New Zealand " in Landscape/Community: Perspectives from New Zealand History, ed. Tony Ballantyne and Judith Bennett (Dunedin: University of Otago Press, 2005).
664 This applies to several of the key observers of change on the Peninsula and about Dunedin that I have found most useful – G.M. Thomson (1848-1933), Alexander Bathgate (1845-1930), Robert
The reminiscences of John McLay, written in 1916 when he was an old man of 75, display the different emotional reactions of the young and old settler. McLay recalled that as a boy, watching his father and other men clear land for themselves (and for Thomas Burns), he ‘did very much like to see the sawyers felling the big Totara pines — when they fell with a terrific crash, smashing all small trees to the ground’ though, even when young his love of clematis flowers in the bush meant that he ‘often thought it was a sin’ to cut the vines to bind shingles. And, having witnessed over his lifetime the deforestation of the Peninsula, he had come to feel that ‘it is a cruel shame the ruthless hand of man should destroy God’s beautiful work, all for the lust of money that sends so many to destruction and for the want of it — misery, sin and shame’. This awareness quite naturally coexisted alongside the knowledge that the forest must and will be used — just two lines later McLay commences a list of ‘the names of some of the best trees for sawing timber’. This account by a Scot who was clearly not a well read or highly literate man, shows that very many settlers might have felt the loss of the forest, whether or not they had any scientific pretensions. McLay’s ambivalence is much the same as that which gnawed at Herbert Guthrie Smith’s troubled heart, as he queried whether he had ‘misunderstood the council of his Scottish forebears’ in feeling urged to ‘Destroy your fern! Clear off your woods’; ought not he, wondered, have heard them say “Oh, be content to leave alone. Admire, conserve, let well alone” Have I then for sixty years desecrated God’s earth and dubbed it improvement?

Lacking such experience of loss and disappearance, the generation following this on the Peninsula could scarcely share the depth of such doubt and conflicted emotions. This difference may indeed help explain why, as David Young noted, the period between the late 1890s and the early 1900s was the most active in our conservation history until the 1960s. This was the period when children who had grown up here from the days of the early settlement came to power. Our very first conservation

Gillies, for example. In other areas of New Zealand the timing of bush clearance obviously differed, and so would settlers’ responses.

667 Herbert Guthrie-Smith, Tutira — the Story of a New Zealand Sheep Station (Seattle and London: University of Washington Press, 1921), xxiii.
668 Young, Our Islands, Our Selves, 88.
organisation, the Dunedin and Suburban Reserves Conservation Society, was established in 1888, largely through the efforts of Alexander Bathgate. Three islands - Little Barrier, Resolution, and Kapiti, were set aside as reserves to protect their wildlife.

Yet, as Renata pointed out, most people could not go to sanctuaries such as Resolution Island; he called for more protection about the places people actually lived, and wrote to try and awaken interest in native birds so as to prevent their disappearing from the Peninsula. Such calls went long unheeded. People willing and able to question the inherited doctrines of improvement, civilisation and progress through which nineteenth century settler New Zealand was forged became increasingly few and far after 1900. Doing so required querying the effects of the dominant myth of the age: that a better, perhaps even a promised land, could be brought to fruition through the arduous labour of clearance: the process still known as 'conversion'. No action was taken to preserve wildlife on the Peninsula until much later in the twentieth century. And, even now, Renata's pessimism as to the ultimate fate of the Peninsula's birdlife is probably still justified. Renata's sentiments have become more widely shared, and we have succeeded in staving off the disappearance of a significant number of birds, and have welcomed the reappearance of breeding seals and sea lions. Today several species retain small populations on the Peninsula - amongst them the yellow-eyed and little blue penguins, the sooty shearwater, and the royal albatross - but only by stint of continuous and intensive predator control. In the long term, reliance on the capacity and willingness of human beings for protection is almost certainly not sustainable. On the New Zealand main land at least, these species are perhaps but 'the living dead'.

669 Ibid., 96.
670 Ibid., 88.
671 Aparata Renata, 'Something about our Native Birds,' Otago Witness, 22 March 1894, p50.
672 This lack of protection for areas that people actually inhabit arguably remains a problem today. There is a lack of a middle ground between National Parks, and wilderness areas, in which people are tolerated only as visitors to a 'pristine' environment, and other environments in which, at least until recently, no protections were afforded the environment.
673 Young, Our Islands, Our Selves, 72, 104.
674 Worthy and Holdaway, The Lost World of the Moa, 564.
9.6 Conclusion

The Scots who predominantly settled on the Otago Peninsula established tight knit communities, and enjoyed relative economic prosperity. On their own terms, they made what they saw as an empty, 'waste wilderness', into a 'better Britain'. This was primarily accomplished by the enclosure of land within precisely defined private properties, and the efficient improvement of that land by extremely industrious owners. By 1900 the European lands had become a landscape of small-farms, producing fine dairy produce. The Peninsula had, therefore, been comprehensively improved.

The principal themes of this part of the thesis have been to document the course of that improvement, but simultaneously to trace how the local environment altered the development of settlement on the Peninsula, so that it departed from the original plan to reshape it. This process occurred in tandem with shifts in farming and settlement patterns driven by the wider economy. In particular, the Peninsula suffered from the difficulty in opening froms of transport, such as rail, that elsewhere expanded the hinterland of Dunedin, and made large scale agricultural production possible. The persistent but predictably futile attempts by Peninsula residents to raise the capital to construct a railroad for themselves show how keenly they felt this transformation. Once the closest agricultural area to Dunedin, supplier of most of its vegetables and dairy produce, they were rendered relatively more and more distant.

Second, the thesis has identified the seeds of a different vision for the Peninsula, derived from the unsettling experience of witnessing such profound environmental transformation. The settlers' goal to reproduce a mode of production – family small farming – which had largely vanished in Britain, and of which very few settlers therefore had any experience, had determined how they approached the Otago Peninsula. The Peninsula's proximity to the harbour and the site of Dunedin, and its abundance of wood, ultimately determined its fate: it was surveyed and allocated into small farming properties according to the precepts of contiguity and concentration.

This system of property disregarded the problem noted as the first settlers sailed into the harbour: these hills were too steep and the topography too broken, for mixed
farming. As it proved, market forces dictated dairy farming as the most profitable pursuit on such small-holdings. Dairying is the most intensive of all pastoral forms of farming. Cattle changed the Peninsula environment rapidly. What vegetation the settlers did not burn or drain, was soon eaten by cows, or churned by their hooves. The Peninsula's steep hillsides and slippery clay soils have been sliding into the sea ever since.

If some few wondered at the wisdom of the settlers' means, none really questioned the validity of their goal: to support communities of small farmers on the Peninsula. Yet in Thomson's inversion of the progress of settlement at the close of the century, characterising what had been done so far as the 'age of destruction' and calling for an 'era of improvement,' can be discerned the seeds of a fear that the proprietors' singleminded pursuit of progress had too long ignored the value of the environment before them, and saved too vestiges of the verdure that had once clothed its hills.

Finally, this thesis has outlined the increasing marginalisation of Otakou Maori, relegated to their 'reserve' on the Peninsula. Maori had reorganised their systems of property in an effort to adapt to the new political, cultural, and economic order imposed by Europeans, while retaining something of their existing ecological relationships. Neither goal had been wholly met: the 1880s and early 1890s had been, as Mackay had predicted, very difficult years, if not, as he had feared, a 'drift into a state of semi starvation'. Money was scarce, and mahinga kai were vanishing fast. For most families, the properties established in 1868 had proved uneconomic, much as the original small holdings had for many of the Europeans. A few families had been able to increase their holdings; more were in danger of losing their land. The division of land did, however, continue to ensure access and control over kai moana resources for most of the population. As the depression had eased, and the creamery at Otakou opened, some families were able to reoccupy their land and operate dairy farms. But as farm sizes grew in the years ahead, many Maori landowners would struggle to retain their properties. In later decades, European landowners faced the same struggle.

675 Mackay, 'To the Under Secretary, Native Department,' Appendices to the Journal of the House of Representatives, 1881, G8, 16.
676 Dacker, Te Mamae me te Aroha, 89.
Conclusion

Marco Polo describes a bridge, stone by stone
"But which is the stone that supports the bridge?"
Kublai Khan asks.
"The bridge is not supported by one stone or another,"
Marco answers, "but by the line of the arch that they form."
Kublai Khan remains silent, reflecting. Then he adds:
"Why do you speak to me of the stones? It is only the arch that matters to me."
Polo answers: "Without stones there is no arch."

Italo Calvino Invisible Cities

This thesis has described the entwining of human history with the ecology of the Otago Peninsula up until the end of the nineteenth century. It argued that ecology, culture, and ideology are mutually determining, and together structure an unending dialectic of change. To investigate that dialectic, it examined the different ways the imposition and development of different systems of property and tenure to resources structured people's engagement with the Otago Peninsula environment.

This argument was a response to the call by Tom Griffiths and Libby Robin for antipodean environmental historians to explore insights that reshape the environmental determinism found in much environmental history, and help place human agency back at the forefront of our explanations. The most internationally influential account of New Zealand's environmental history, for example, that of Alfred Crosby, focused on the role of the biological invasion of New Zealand in transforming this environment. But Crosby tended to ignore the unique characteristics of Maori and English culture that shaped how and why this biological invasion occurred. As Eric Pawson has suggested, Crosby's analysis dovetails just too neatly for comfort with the quasi-Darwinian belief in the 'inevitability of the 'success' of European against indigenous species.' In discussing botanic exchange, Pawson

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therefore calls for an approach that places the emphasis on the 'material and symbolic appropriation of distant species in refashioning landscapes.'

This thesis similarly focused on the power of the material and symbolic aspects of culture in refashioning landscapes, but it investigated the role of property systems as an expression of them. In many respects this thesis has therefore followed the trailblazing work of John Weaver, who illustrated the power of British notions of property rights, and techniques and technologies for securing them, in helping explain the demographic takeover of just those neo-Europe settlements Crosby had also focused on, including New Zealand.

This thesis naturally pays much closer attention to the environmental history of Maori than have international scholars such as Crosby or Weaver. To be fair, Crosby was discussing European impacts, but effectively ignoring the single most potent example of ecological change caused by a biological invader in New Zealand—the kiore—does weaken his case for European exceptionalism. Weaver's topic is also restricted, and essentially addresses only how property rights supported European settlement and dispossessed Maori. The focus in this thesis on how Maori actively sought to adapt European property rights systems, even as they were forced upon them, is absent. In fact, New Zealand scholars have rarely attempted this sort of integrated study either. Environmental historians here have typically focused either on the history of ideas, or on histories of biological invasion, or on the transformation of the environment into economic commodities. They have seldom sought to investigate links between these domains.

This work does have close parallels, however, in the early work of William Cronon in *Changes in the Land*, and in Richard White's *A History of Island County*. These works also examined the panoply of changes that occurred as indigenous societies confronted European settlers and their portmanteau biota. They too investigated interwoven changes at all of the broad levels of environmental history, namely the environment, the economy, culture and ideology. Their findings are in many respects replicated here also. For example, both Cronon and White find amongst the Indians of

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679 Ibid., 1472
their respective areas a fluid relationship between sovereign political authority, and
tenure to resources, that was significantly modified by the arrival of resource hunters,
and finally could not cope with restriction to reserves. Like their studies, this work
has also focused on foregrounding Maori agency in attempting to adjust to these
changes. I have highlighted the role Maori played in cultivating Europeans,
encouraging contact, and actively incorporating the organisms, objects and tools they
brought.

Apart from the fact that this thesis investigates specifics of change in a different
locale, the primary way in which this thesis perhaps adds a dimension that is missing
in their works, is by investigating evolution in the Maori relationship with the
environment prior to European arrival, since White and Cronon focused on how
Indians adapted to the arrival of Europeans. The analysis of change in this thesis is a
corrective to the timeless quality which indigenous peoples may become cloaked in if
they appear at the beginning of a narrative ‘fully formed’. Ironically, this is
particularly likely when those who owe disciplinary allegiance to written texts write
environmental history. Environmental history cannot afford this bias however,
especially if it is to retain anything of its power to persuade us to adopt more benign
relationships with our environments.

In using property systems as a lens through which to examine the how the history of
the environment has intertwined with change in people’s economic and cultural
structures, this thesis addressed three general questions. First: what do their respective
property systems tell us about the ways the social, economic, and ideological
structures of Maori and European society shaped their initial settlement on the Otago
Peninsula? Second, in what ways have these property systems shaped their
interactions with this particular environment? Third, how did property systems change
over time, and what insights can the story of such changes provide into the ways
attitudes and ideologies shifted to accompany the unfolding of environmental change?

The answer elaborated to the first question revolved around investigating what the
first settlers had in common, and what differentiated them. Both Maori and Europeans
initially lacked knowledge of this environment, and so had little choice but to exploit
a small band of obvious and accessible resources: large game such as moa, seal and whales. These were predictable and obvious animals, found concentrated in the same places at the same times. In each case, exploiting clumps of large game allowed focused settlements despite narrow ecological engagement. But in the absence of agreed property rights, controlling exploitation was extremely difficult for both groups. This was identified as a characteristic of frontiers of exploitation. In each case, the result of early Maori and European engagement with the Peninsula was the rapid extermination of the animals concerned, despite the small numbers of human beings involved.

Once large game had gone, both Maori and Pakeha had to generate new economies. From this point Maori and Pakeha moved on divergent trajectories. Maori came from a radically different tropical environment, and had to learn to engage with a temperate environment from scratch; the organisms they brought with them could not survive here, and much of their environmental knowledge was completely irrelevant.

Over several hundred years they gradually shaped their economy in accordance with a deepening understanding of the spatial patterns and temporal cycles of abundance of very many other species. Each community adapted a complex pattern of seasonal fission and fusion in order to range over a wide territory gathering localised flushes of fine-grained resources.

This economy was reflected in, and entrenched by, increasingly tightly determined property systems that allocated community members use rights to different species found over wide areas at different times of the year. Property rights were therefore divided functionally, rather than geographically. The same place, that is, could have a range of different 'titles', to different resources, held by different people. Control over how resources were exploited was made possible – and ultimately profitable because these use rights were primarily defined by ancestral use. Outsiders could acquire rights through establishing and maintaining relationships with those claiming rights through descent. Property rights were therefore precisely as tightly knit as the relationships among people. People within a community thereby knew what they were entitled to, and the community protected the uses of its individual members against
encroachment by outsiders. A closely-knit fabric of place names that helped pinpoint use rights in intra and inter hapu discussions marked out the cultural landscape. The mana of the people, and in particular their leaders, depended upon defending those rights, and transmitting them as an inheritance for their descendants.

As a whole, the economy of each group was directed at efficient harvesting and transporting of resources to a critical point in time and space – where a community of people chose to weather winter together. For many Maori foraging across the Otago region, this was the Otago Peninsula. In sum, because the Otago Peninsula was one of the oldest, most continuously and intensively occupied, and southerly focal points of Maori settlement, it represents one of the most complete examples of these patterns of cultural adjustment to a new environment in New Zealand.

Whether or not Maori communities exploited resources ‘sustainably’ by the contact period is a moot point. The environmental data is simply not robust enough to come to any firm conclusions. The suggestion Maori used resources according to a pitiless economic logic dictated strictly by the return of energy on expenditure, is an argument from analogy extrapolated from its original zoological setting. As such, it has the inherent weaknesses of all analogies. In this case, major discrepancies include the ability of human beings to foresee the consequences of their actions, and the shaping power of human culture. Further, the argument can be countered by the fact that there are very few documented examples of species extinction from the period of later settlement throughout New Zealand, despite greatly increased Maori populations. Of course, perhaps by this time the vulnerable species had all been exterminated. Similarly, archaeological evidence that shellfish found in middens become smaller over time in some sites, must be balanced with traditional accounts of seeding superior shellfish stocks into new locations.

What I have endeavoured to establish is that the preconditions for practising greater sustainability arose over time. I have stressed the significance of recognised mechanisms for asserting, upholding, and transmitting agreed property rights, which established a close connection between the fortunes of a particular lineage, and the resources on which their mana depended. Sanctions restricting the use of resources to
seasonally appropriate times were also adopted, and strictly enforced by community leaders. The Maori belief that human beings were related to all other beings may also have been significant.

The stance that over centuries of occupation Maori may have learnt how to live in a measure of greater harmony with the rhythms of the Otago Peninsula environment is not unique. It is certainly shared by some of those other scholars who have conducted intensive study of southern Maori interaction with the environment, such as Jim Williams and Tipene O'Regan. And, while it runs counter to the argumentative thrust of archaeologists such as Atholl Anderson, it ought to be stressed that archaeological evidence relating to later Maori occupation in Otago is actually extremely scanty.

Because Europeans came from a temperate climate relatively similar to that of the Otago Peninsula, the crops and stock on which their culture subsisted could succeed, if a suitable habitat was created for them. However, Europeans initially came as transient visitors more concerned to exploit as commodities for sale on world markets existing resources that were common on the Peninsula, but rare elsewhere. Seals, whales, flax, and timber were the most important of these. Because demand for these resources was stimulated by their exchange value in imperial markets, and because European contacts, were transient, there was no impetus towards controlled exploitation. Sealers, for example, knew they would destroy the resource, but collective restraint was impossible where property rights could not be agreed and enforced. Such controls as did arise were largely imposed by the need to interact with Maori in order to gain access to resources. Flax, for example, could only be procured from Maori, and this required establishing and maintaining relationships with Maori leaders. Those ship captains who did this successfully, such as Kent, therefore dominated the flax trade. Sealers, on the other hand, could carry on their business with or without Maori, but those sealers who chose to ignore Maori were more likely to become embroiled in violent conflict.

Shore whaling introduced a new level of interaction, since whalers had to negotiate rights for the base required for their operations. They therefore established strategic political ties with Maori communities, solidified by intermarriage. Shore whaling
began to integrate Maori as part of a commercial economy in which their labour and resources were traded for a range of goods. The most significant goods—potatoes, muskets, and whaleboats—reshaped Maori economic and social structures on the Peninsula.

Whalers also began the process of European settlement there, and negotiated crucial exchanges with Maori that developed shared understandings surrounding property systems, such as the organisation of labour, exchange of goods, and rights to occupy and use land based on maintaining ongoing relationships. Establishing a field of common understanding prepared the ground for, and hastened the advent of, organised European settlement. But it also drew Maori and the Peninsula into contact with phenomena such as diseases and other invasive organisms that no one understood, with unpredictable and terrifying impacts. This thesis has documented the impact of these diseases on the Peninsula in considerable detail, and attempted to reconcile contrasting interpretations in previous historiography. It has confirmed that several early epidemics did occur, with considerable demographic and cultural impacts. These impacts threatened Maori understandings of the world, and stimulated intense interest in European understandings, including European spirituality. Adapting Christianity was a crucial part of processes of cultural change that altered the role of Maori political leadership.

Yet, while Maori controlled the disposition of property rights these changes did not alter the fundamentals of environmental interaction on the Otago Peninsula. People still largely sought to harvest the resources that the existing ecology provided. With the partial exception of cropping land for potatoes (still largely swidden agriculture where much of the original ecology would be allowed to reassert itself), little effort was directed towards creating a new ecological habitat that would produce a different set of resources.

The Otago settlement, that followed the sale of the Otago block by contrast, was predicated on the creation of a new ecological habitat on the Peninsula. Settlers had the motive and the means to create that habitat. They believed that there was a moral
and economic imperative to own and 'improve' the land, which they saw as a waste, howling wilderness. They believed their farms would form the 'Lord's Garden'.

This ideology was widespread in New Zealand and in other colonial settings. But the power of this belief to reshape an environment was epitomised by the settlers of the Otago Peninsula. First, the Peninsula was settled at a point when the doctrine of improvement saturated British culture, nowhere more so than in Scotland. The settlers were well aware that improvement was predicated upon secure property rights, and did not proceed with settlement until Crown title was gained. Much of the Otago Peninsula was then mapped out as a series of properties even before the settlers arrived, in one of the very earliest cases in New Zealand where the most exact method, triangulated survey, was used to precisely determine the parameters of the landscape, subsequently allowing for precisely bounded land parcels. With certainty of tenure, Peninsula farmers were secure in the knowledge that when they turned over every inch of a field all their labour was precisely contained within their property.

The early survey of the Peninsula also meant the fulfilment of the Otago settlers' desire to establish small-farming communities bound by Church and family was attempted there in perhaps its most focused and prolonged form. Its settlement was dominated by Scots, who at this point, were a comparatively extremely highly educated people, and an undeniably hardworking people also. They shared an intense interest in improving their farming practice, and the newspapers of the time are filled with their suggestions as to how to better transform New Zealand's environments. The diary of a man such as Walter Riddell reveals he worked extraordinary hours on the land, begrudging himself every day off, but still had time to build a church, and help establish a small community library at Highcliff. Notably too, it was upon the Otago Peninsula that Thomas Burns established his farm as a model of what other settlers ought to emulate, and a succession of prominent settlers did likewise over subsequent decades, most significantly William Larnach. The Otago Peninsula landscape therefore is a very valuable setting in which to test how settlers' adapted their farming as they sought to improve the land. Further, because it was one of the few areas in coastal Otago that retained substantial tracts of forest, it was of great interest to the more educated settlers, many of whom shared a keen interest in natural
history, another defining passion of the age. The Dunedin Naturalists Field Club, established in 1871, very often visited the Peninsula. Again it is significant, as elaborated by David Young and James Beattie, that many of these early naturalists, were Scots.\textsuperscript{680} The sustained interest of G.M Thomson, who was to write an early (and for its time, magisterial) history of the acclimatisation of plants and animals in New Zealand, is particularly noteworthy, since Thomson was concerned to dispel the notion that European arrivals inevitably displaced native species.

European settlers sought to recreate the market relations of European production, by producing a focused range of exports in exchange for a wide range of imports – the panoply of civilised things of Home that their infant society could not hope to reproduce. The means for creating these habitats were the tools and techniques of property creation, and then of farming, as applied by each settler within their property.

In the space of two short generations the structure of a small-farming economy was imposed, and the Peninsula was almost wholly deforested. While all types of agricultural habitat continued to expand in this area until the end of the nineteenth century – as links with the wider world and its markets improved – the specialized production characteristic of capitalism developed on the Peninsula. The proportions of land devoted to different types of production changed dramatically: comparatively more and more land was devoted to growing grass and fodder crops for dairy production, and less and less for cereal crops, orchards, or market gardens. By the turn of the century, the Peninsula was sometimes referred to as 'one large dairy farm.'

The construction of the European cultural landscape destroyed much of the indigenous environment. By the turn of the century less than 20 percent of the Peninsula’s forest or tussock habitat remained, but in severely degraded form. Most indigenous life forms had either entirely disappeared, or were greatly diminished, replaced by the panoply of organisms that accompanied European settlement. This

\textsuperscript{680}David Young, \textit{Our Islands, Our Selves} (Dunedin: University of Otago Press, 2004), James Beattie, "W.L. Lindsay, Scottish Environmentalism and the 'Improvement' of Nineteenth-Century New Zealand" in \textit{Landscape/Community: Perspectives from New Zealand History}, ed. Tony Ballantyne and Judith Bennett (Dunedin: University of Otago Press, 2005).
thesis has stressed the fact that there was nothing biologically inevitable about this: it was not a consequence of natural law, or differential evolutionary fitness. It was a consequence of premeditated human action in creating, with great labour, the environments needed for stock and crops to flourish.

A similar environmental transformation occurred, albeit to a lesser extent, on the remaining Maori land, as they attempted, not very successfully, to adapt to the new economy. Their attempts were, of course greatly hampered by the restrictions on their property arrangements imposed by central and provincial governments. The latter in particular clearly resented their lack of title over these lands, and had done so since the Scots arrival. They could not, for example, sell or lease land after the provincial authorities interfered with their leasing arrangements with the ex-whalers. Worse, they could not raise capital against their land. Their property arrangements reflected an uneasy compromise between the ways their cultural traditions had long engaged with the environment, and the need to accommodate their economy within the broader context determined by Europeans. The strips of land they created attempted to allow each owner access to a range of forest, littoral and oceanic environments; in this sense, they strived for equality. However, unlike the European sections, there was no attempt at any nominal equality by area: bigger sections, comprising much of the land, were allocated to the most significant people. Only the larger sections were at all practical as individual farms even at the time. As a system of land ownership meant to sustain its proprietors, this was a failure: almost all of the land was leased to Europeans by the turn of the century. But this failure also reflected the refusal by Europeans to countenance Maori systems of property – their traditional tenure to resources such as shorelines, estuaries, and wetlands in particular. Maori leaders protested at this, and rallied their communities to fund ongoing campaigns to regain sufficient access to their lands and resources to re-establish a functional economy. But this financially crippling effort was almost entirely in vain, for well over one hundred years.

At the turn of the century, an observer might have concluded, in contrast, that the Europeans had successfully ‘improved’ the land into functional farms. Burns would have recognised in this landscape much of his longed for ‘pretty farms, “the busy
mile,” and the happy smiling cottages by the wayside or nestling amid the trees in some bosky dingle or sylvan dell.' He surely could not have failed to be impressed by the evident labour with which this farming landscape had been created by its proprietors, symbolised by the painstaking effort to construct the stonewalls marking the boundaries of often prosperous landholdings. He would have wondered though, at the lack of cereals, the lack of trees, and the specialized production of dairy products. He may well have had concerns over farming that was wholly subservient to the production of milk. He would still have recognised the people: most were of Scots descent, and lived as family-farmers, or in small tight-knit communities. They were, in the main, Christian, law-abiding, and comparatively highly educated. They had learnt to love this land as their home. Yet they had been changed in the process. The seeds of doubt over the doctrine of improvement had been sown in the settlers’ experience of inhabiting such a rapidly transforming landscape. While the speed at which civilisation took hold was, therefore, most often a matter for celebration, it was also a deeply unsettling experience. Thus, at the close of he century, G.M Thomson suggested his readers in the Otago Witness ponder the meaning of what they had witnessed: 

If a Rip Van Winkle among naturalists could arise here, one who had known the natural conditions in 1849, and if he could be dropped down in Dunedin now, he would be astounded at the changes which had taken place during the interval in the aspect of Nature. A very large proportion of the indigenous flora and fauna has disappeared. The ferns and other delicate plants which formerly filled up the bush are nearly all gone, dried up and exterminated. The big trees have disappeared long ago. The undergrowth consists very largely of European plants, the birds are those of the old land, the whole face of Nature is altered.

This thesis leaves the study of the twentieth century and the beginnings of the twenty-first, for others. Yet two trends of the twentieth century are so obvious and inescapable that I cannot avoid comment on them, for they have implicitly shaped the arc of my story. First, the twentieth century saw a spreading and intensifying desire to salvage the indigenous environment. As I have shown, the seeds of that sentiment lay in the settler’s experiences of transformation in the previous century. Second, the

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681 The Reverend Thomas Burns to Captain John Cargill, 30 January 1847. See Ernest Northcroft Merrington, A Great Coloniser the Rev. Dr. Thomas Burns (Dunedin: The Otago Daily Times and Witness Newspapers Co., Ltd, 1929), 266.

Peninsula has become less and less economically valuable as farmland; today perhaps a dozen farms, largely sheep farms, but still small by contemporary standards, cover the entire landmass, where once there were over two hundred. Few of those remaining farmers sustain themselves from their production of meat and wool alone. Though partly a matter of economic conditions, environmental factors have contributed to the current position: small farming is simply not viable on the variable soils of the Peninsula's steep slopes. Dairying, for example, is no longer seen as an appropriate use for such erosion prone land.

Instead the economy of the Peninsula is now dominated by ventures displaying the remnants of the indigenous environment to tourists. The Peninsula has become more and more valuable as a place where wildlife such as albatross, seals, sea lions and penguins can be seen close at hand and in their 'natural' habitat. The advent of breeding Royal Albatross symbolize the change, returning when the loss of forest provided suitable nesting sites, protected by the devotion of, at first, just one man, Lance Richdale, but now conserved through highly organised and intensive management. In hindsight, then, the dreams of the Pakeha founders as expressed in the property arrangements of the Peninsula, have also failed: where its residents seek to make a living from the Peninsula environment, they now largely do so from the scraps of indigenous life left in the wake of nineteenth century settlement.

Narrative is not a feature of the physical universe until we make it so. Yet telling stories is the essence of history, which is an ineluctably storied form; we simply cannot make meaningful sense of the past unless it is retold as narrative. And the point of narratives is to chart an arc from beginning to end: stories fling (largely illusory) spans of cause and effect across the abyss of the past. Dividing the seamless past into particular events and processes – the losses of some species, the arrival of others, the shifting sands of Otakou, the development of farming, the removal of forest – all only make any meaningful sense within the context of the arc of my story,

shaped by its beginning in a Peninsula ecology of stunning ecological richness and diversity, and ending in a landscape of deep and rich human history. It has been my equal concern to stress that the concomitant of that human history has been irretrievable ecological destruction and loss and, too, that the Maori and European settlers who had accomplished these twinned effects were themselves capable of feeling both pride and remorse. Such regret is not simply a contemporary nostalgia.

My knowledge of the Otago Peninsula as it is today has inevitably permeated my story. How I receive the description of Aparata Renata searching for, finding, and shooting the last two kereru he ever expected to see on the Peninsula is of course coloured by the contemporary knowledge that kereru have returned. Expectations for the future also shape characterisations of the past. Renata wrote his paean in the belief that all the native birds of the Peninsula were doomed – that although a few of ‘the ocean wanderers’ might hold out, the ecological tumult unleashed by humans and their multitude of companion species would overwhelm all that had once made the Peninsula home.

In the broader context of Otago, and even New Zealand, this thesis provides one of all too few intensive local historical studies with an environmental focus. This thesis has, I hope, provided a small contribution to the knowledge of the Otago Peninsula’s ecological and cultural past – knowledge that we will need if we are to avoid fulfilling Renata’s fatalism. Very many species maintain a very tenuous existence on the Peninsula, or are still in decline despite all our efforts; in the long run, it seems, Renata might still be right. If human beings are to continue to call the Peninsula home, we must work very hard to make sure he is wrong. The success of that work will depend in part on awareness of the environmental history of the Peninsula.

The fate of the sooty shearwater provides a fitting closing allegory for what the Peninsula once was, what people have made of it, and may make of it in the future. Once present in teeming breeding multitudes that fertilised the soil by connecting the land to the ecosystems of the sea, migrating sooty shearwaters may have been among the birds that led Polynesians to these lands. Though the populations of most other shearwater species were greatly diminished by the impacts of Polynesian rats, sooty
shearwaters were large enough to survive. As the people who had brought rats here became Maori, they learned to treasure the sooty shearwaters as one of their most significant resources (they remain so today, and their annual harvest is one of very examples of ongoing Maori control and authority over natural resources). The whalers traded for preserved shearwaters with Maori, and endured the absence of their wives for times during the weeks of harvest. When the European settlers arrived here in 1848, they were met as Thomas Ferens exulted by the 'cormorants [which] rose out of the water as we approached by thousands, land snipes, gulls... the imagination fired, and here will nature triumphant and bring the mind to rejoice, and adore the divine being—'. Within 50 years of European settlement, however, the shearwaters, once perhaps most numerous of such sea birds, had dwindled to small and scattered small colonies. Now they have almost disappeared. Yet, recently, a few birds have returned to breed on the slopes backing off beaches where people have begun to replant a farmer’s hillsides once more. Nature has hardly been triumphant, nor can my mind bring itself to rejoice — but the surviving life upon the Peninsula is still in our hands.

685 Ferens, 23 March 1848.
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