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Loving Nature, Killing Nature, and the Crises of Caring: An anthropological investigation of conflicts affecting feral pig management in Queensland, Australia

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None.

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None.

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Abstract

The pursuit of a long term and effective feral pig management strategy remains elusive in the Douglas Shire of Far North Queensland—a part of regional Australia where social relationships and identities have been reconfigured over a 30 year period of environmentally-based contestation. This thesis investigates the sociocultural factors that have contributed to a management impasse over feral pigs within its broader historical and contemporary context. Drawing on theories of belonging, indigeneity and environmental perception, and studies of science and technology, the concepts of endogenous and exogenous identities are developed. These concepts are used to explain the persistence of environmental disputes in this region generally and over the management of feral pigs in particular. Concepts of endogenous and exogenous identities are applied to individuals termed 'Greenie', 'Local', 'Ecologist', 'Manager' and 'Hunter' who form clusters of identities that are (re)produced relationally and in the technologically mediated practices that also transform this rural place. I demonstrate how exogenous identities, that advance scientific understandings of nature, have been successful in the material and symbolic reshaping of the Douglas Shire and influential in the development Australia's environmental and animal protection legislation and policy. I argue that it is as a consequence of this reshaping that the (endogenous) practice of pig hunting is increasingly construed as deviant in respect to the law. Illustrating how technologies and scientific knowledge impact on the (re)production of identity and place reveals how these can become objects of dispute and entrenched resistance in environmental interventions. I conclude by arguing that management, as it is currently practiced, has aimed to create reified forms of both nature and culture. By making explicit that environmental management is, necessarily, an activity that reshapes both the environment and identities, I suggest that management planning be reframed to incorporate the preservation of cultural diversity, and continued reproduction of social relationships that are dependent on the environment, as core aims.

Keywords

environmental anthropology, pig hunting, science and technology, environmental management, conflict, ethnography, place and identity, rural transformation

Australian and New Zealand Standard Research Classifications (ANZSRC)

160104 Social and Cultural Anthropology 100%

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Abbreviations and Acronyms

A	Australian Dollar
ACPA	Animal Care and Protection Act
AEC	Australian Electoral Commission
APDHA	Australian Pig Doggers and Hunters Association
APVMA	Australian Pesticides and Veterinary Medicines Association
ARF	Australian Rainforest Foundation
CBFPTP	Community Based Feral Pig Trapping Program
CPPB	Cane Pest and Productivity Board
DAFF	Department of Agriculture Forestry and Fisheries
DEWHA	Department of Environment, Water, Heritage and Art
DNRM	Department of Natural Resources and Mines
DSC	Douglas Shire Council
Gazette	Port Douglas and Mossman Gazette
Hunting	Except where otherwise stated hunting refers to pig hunting with the use of dogs
IUCN	International Union for the Conservation of Nature
NGO	Non-Governmental Organisation
QPWS	Queensland Parks and Wildlife Service
RR	Rainforest Rescue
UNESCO	United Nations Educational, Scientific and Conservation Organisation
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area
WWF	World Wildlife Fund

Preface

Late in 2005, prior to embarking on this doctoral study, I worked for a short period in New Zealand as a statistician amongst a group of ecologists. During the period of my employment some of the staff I worked with conducted fieldwork in a remote part of the South Island. On their return to the office staff might spend tea breaks discussing their experiences in the field; storytelling that included humorous caricatures of pig hunters and their actions based upon events observed in and around the huts that staff shared with hunters. Although humorous, these tales underscored a deeper tension between these two groups—the different manner in which ecologists and hunters related to, and cared for, the environment and the way these differences became manifest as each group manoeuvred within the same space.

In April 2006, holding the qualification of MSc in Mathematics and Statistics, I began this study, a funded project seeking to understand the socioeconomics of feral pig management. A short way into my candidature, in July of 2006, I found myself at a workshop that focused on researching the social drivers of invasive animal control. The events of this workshop solidified the increasing sense of unease I felt about the relevance of my qualifications for the task ahead. My quantitative skills were held in high regard by the natural scientists who had conceived of and funded this project; yet after about ten days spent at my field site, and a few months spent reading around the subject of social aspects of environmental governance, I was all but convinced that quantitative approaches would not usefully illuminate the key problems impacting on feral pig management.

Others in my position might have been prompted to withdraw from such a program to pursue research more suited to their qualifications or to simply formulate research questions suitable to the methods of their expertise. Many, I fear, may not even have noticed the diversity that exists across disciplines in the way that problems are formulated and researched, or worse, assumed that their methods were superior to others and proceeded without caution. However, it seemed natural to me to follow an interesting problem, set in an interesting place, and to understand and elucidate this issue to the best of my capability. Shortly after the workshop, I transferred academic schools and set about coming to grips with the discipline of anthropology and the methods of qualitative social research.

The interesting place was the Wet Tropics of Far North Queensland, containing within it the Wet Tropics World Heritage Area (WTWHA) and the Daintree Rainforest. This region was subject to an array of controversies over its environment that had persisted for at least 30 years. The interesting problem presented itself initially in the form of a vandalised pig trap. During one of my early conversations with some of the area's management staff it transpired that one of the pig traps used in their local pig trapping program had been vandalised. The culprits were thought to be pig hunters annoyed that the trap had been placed on their 'turf'. Reminded of my experiences from New Zealand I became interested in the study of hunters as a group who existed on the periphery of relevance for natural scientists and managers.

Hunters were grudgingly acknowledged as relevant to issues of governance but this group was not afforded the legitimacy to be considered worthy of too close a focus in serious scholarly study that might contribute to environmental management. According to a nationwide study, conducted in Australia between 2000 and 2004, 5% of respondents have hunted feral animals while 1% reported having hunted native animals; this compared with 3% of respondents who reported participating in bushwalking as a pastime (Franklin 2006). There has been virtually no academic engagement by anthropologists or sociologists with non-Aboriginal Australian hunters of any species, the exception being the work of sociologist Adrian Franklin (1996, 2001, 2006) who has conducted studies that address hunting and angling, at a general level, within Australia. Some scientific research has investigated the cost-effectiveness of pig hunting for management in comparison to poison baiting (McIlroy & Saillard 1989) and the use of pig hunters in surveillance of exotic diseases transmitted by pigs (Mason & Fleming 1999). Management literature acknowledges the value of hunting as a recreational activity as well as of potential economic value to rural communities (Choquenot, McIlroy & Korn 1996).

Although I did not recognise it immediately, the production of knowledge (the subject of my workshop unease), including the production of ecological knowledge, has been of central importance in understanding how I came to study this environmental management dispute and in unravelling the mysterious impasse that exists over feral pig management in the WTWHA. The origins of the discipline of ecology, shaped by the work of early naturalists whose descriptive observations assisted in the ordering of plants and animals according to a universal taxonomic schema, plays an important and highly contested role in the definition and protection of nature in the WTWHA. Today however, descriptive and observational approaches have decreased in status

(Tsing 2005). The discipline of ecology is increasingly oriented away from observational studies and towards manipulable experiments and theoretical mathematical modelling.

The history of ecological science provides a window to understanding contemporary environmental disputes while contemporary trends explain some of the difficulties in overcoming conflicts within communities to achieve effective outcomes. This is no more apparent than in the problems associated with cross-disciplinary engagement where there exists an increasing gulf between the methods employed by modern natural scientists and those of the qualitative branches of anthropological, geographical and sociological enquiry. In Australia at least, this trend in ecological science has been accompanied by an apparent predilection on the part of natural scientists to engage with the quantitative branches of social scientific disciplines (Head, Trigger & Mulcock 2005).

Over the past four and a half years I have observed that ecologists' attitudes towards the work of non-social scientists who turn to study the social world—these are usually other ecologists that have discovered the importance of engaging with the social world if they wish to realise their conservation aims—are generally more positive than their attitudes towards individuals whose interests in the relationships between humans and the environment are derived from formal (and especially qualitative) social science training. Initially, I was considered one of these researchers, compared favourably against 'the social scientists'. This is no longer the case. While I have made many lifelong friends amongst the ecology PhD students within my cohort, I remain certain I see a very different problem to those natural scientists with whom I have engaged. This has brought forth a number of tensions in the sometimes competing ideological and affective commitments generated through enquiries directed primarily towards the natural worlds versus those of the social worlds.

These tensions have been personal tensions, between me and those who were paying my stipend, and for much of my study I felt as though the field was far too close to home. Consequently, it has taken me some time to distance myself from this part of my field, to reflect dispassionately on the experience, and recognise that many personal conflicts mirror those that exist in the WTWHA and across the disciplines that I have bridged. I hope that my contribution to this debate presents a constructive critique. I do not wish to condemn the discipline of ecology nor condone the unlawful practices of hunters. My intent has been to show how the application of scientific logics and technological solutions has contributed to divisions in this region, not to demonise scientists, but to suggest ways in which latent issues that hamper effective environmental governance in this region may be addressed.

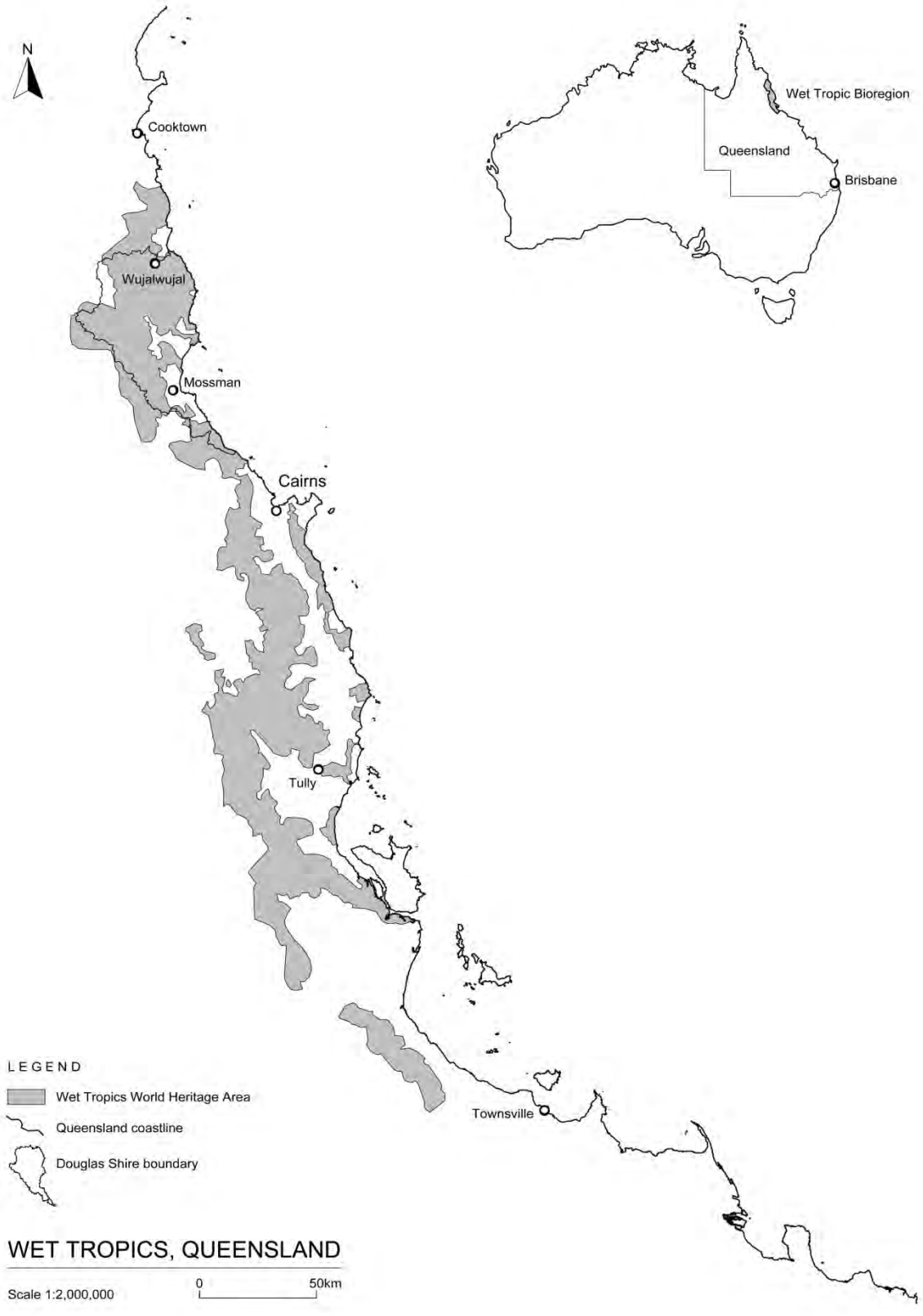
1 Introduction

1.1 Introduction to the feral pig problem

The Wet Tropics of Far North Queensland is an ecologically defined 'bioregion' that covers a thin strip of land approximately 500 kilometres long and 50 kilometres wide stretching along the coast of north Queensland between the cities of Townsville in the south and Cooktown in the north (Map 1). In the Wet Tropics of Far North Queensland, agreement on, and implementation of, an 'effective' feral pig management strategy remains elusive. This thesis is an attempt to understand and explain the sociocultural dimensions of this management impasse.

In this thesis I contend that management activities are fragmented due to under-resourcing, disputes over tenure, issues related to the availability and acceptability of pig control technologies, and the physical environment and geography of the Wet Tropics that places restrictions on access to parts of the region. At the time of writing, State[1] subsidised management of feral pigs on both state-owned and private land (usually along the tenure boundaries) is restricted to limited pockets of live catch pig trapping programs. Use of this control method is restricted by factors such as cost as well as the vehicle access required for trappers to maintain traps. In addition, some trapping is administered by individuals and hunters on private property. Hunting is illegal on state-owned land in Queensland although it takes place legally on private land and poison baiting, notably the use of sodium monofluoroacetate (commonly known as compound 1080), is registered for use in pig control and administered under strict supervision on some privately held land, but prohibited within the Wet Tropics World Heritage Area (WTMA 2006).

[1] I use the term State to refer to the combined governments and bureaucracies of Queensland and the Commonwealth. To avoid confusion I always refer to the Queensland Government as such and not, as it is commonly known, as the State Government.



Map 1 Wet Tropics of Queensland showing Wet Tropics World Heritage Area and the Douglas Shire Council local government area.

Feral pigs are listed as a 'key threatening process' in the *Environmental Protection and Biodiversity Conservation Act 1999* (Cwth) and a class 2 pest according to the *Land Protection (Pest and Stock Route Management) Act 2002* (Qld). Queensland Government legislation stipulates that landholders, both state and private, are required to 'take reasonable steps to keep [their] land free of class 1 and class 2 pests' (s 77, p. 49). The introduction, feeding, keeping, transportation and release of feral pigs are illegal without a special permit. The feral pig is declared as a class 2 pest for two reasons: (1) it is established in the state of Queensland and (2) it 'is causing, or has the potential to cause, an adverse economic, environmental or social impact in the State' (s 38, p. 32). Strictly speaking, feral pigs are not themselves listed as the threatening process, rather the listed threat is 'Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs' and the description of the listing states that:

> [there is a negative] impact on native ecosystems, flora and fauna due to the presence of feral pigs (*Sus scrofa*), their movement, rooting, wallowing, trampling, tusking or rubbing trees, and consumption of water, animals, plants and soil organisms.[…] They provide reservoirs for endemic diseases [and] can be vectors of exotic diseases (DEWHA 2009).

Feral pigs have the potential to carry and spread a variety of diseases including zoonotic diseases (diseases that can be transmitted from non-human animals to humans) such as leptospirosis, brucellosis and tuberculosis (Choquenot, McIlroy & Korn 1996, p. 26). Feral pigs are also held responsible for their impacts on agriculture, which in the Wet Tropics includes their impacts on cattle, sugarcane and banana farms as well as smaller industries such as exotic fruit and flower growing operations. The extent to which feral pigs may be responsible for the detrimental impacts described remain contested facts amongst both scientific and lay individuals concerned with feral pigs (Choquenot, McIlroy & Korn 1996, p. 41). In spite of this contestation over the extent to which pigs cause detrimental impacts, the management issue I will describe is underpinned by a general consensus that pigs are an undesirable presence in the region. Thus, this management issue presents a case study where a consensus that pigs are a pest, has not translated into a common agreement on an appropriate management regime.

1.2 Research Questions

Within the Wet Tropics World Heritage Area (WTWHA), the Invasive Animals CRC who funded this research was interested in obtaining an answer to the following question: What factors influence the adoption of technological products and strategies that may be useful in improving environmental management outcomes?

Having heard about the vandalism of a state owned pig trap by hunters, and noted the exclusion of hunters from National Park estate, recreationally and as managers, the research questions that interested me were: How, when and why does hunting practice sit within, or apart from, the landscape of management? What makes hunting an unacceptable activity within the national parks of Australia?

In this thesis I answer both the above questions by examining the way science and technology influences identity and belonging through environmental management interventions in the specific location of the Douglas Shire of Far North Queensland.

Here, following a grounded theory approach (Glaser & Strauss, 1969), I develop the concepts of endogenous and exogenous identities to understand, and thus assist in answering, the research questions posed. The typology of endogenous and exogenous identities is used to explain how social conflict develops through an entwined assemblage of social, technological and environmental processes. Considering 'hunting' and 'management' as alternatively endogenous and exogenous sociotechnological assemblages, the second set of research questions is nested within the first as a further case study. Specifically, the comparison of 'management' in contrast to 'hunting' assists in uncovering the distinctive interpretive practices as well as technical differences that construct these two modes of human–environment engagement.

By exploring these two sets of research questions together, this thesis engages in a balanced critique of science and scientists, alongside that of non-scientific communities, including subcultures such as hunters. Ultimately, I argue that entrenched resistance to control technologies has occurred because the development and implementation of technological

products and strategies are processes indistinguishable from the relational processes that, in this region, continue to reproduce oppositional identities.

1.3 Literature Review: Anthropological Analyses of Invasive Species Management and the Cultural Driver of Belonging

1.3.1 Feral pigs: Species out of place?

The feral pigs (*Sus scrofa*) that inhabit Australia are descendants of the Eurasian wild boar. This species originated in island South East Asia and subsequently dispersed throughout Eurasia before spreading, with human assistance, to inhabit the American continents, Australia, Oceania and other parts of the world (Larson et al. 2005, Tisdell 1982). It is estimated that domesticated pigs (also *Sus scrofa*) appeared in Oceania, including New Guinea, between 10,000 and 3000 years before the present (Larson et al. 2005). Despite the proximity of Papua New Guinea to the mainland of Australia, ongoing trade relations across the Torres Straits and visits by Macassans from southern Indonesia that intensified in approximately 1700 (Macknight 1976), pigs did not arrive in Australia until European settlement.

It is unlikely that pigs were released by Captain Cook during his exploration in 1770 and the earliest reports of feral pigs being sighted exist in journals of European explorers from 1847 onwards. Pigs were not subject to deliberate release into the wild, instead, feral colonies were founded from escaped domestic stock that quickly lost their domestic characteristics and reverted to those associated with the European wild boar (Pullar 1950). Since their introduction, feral pigs have become well established throughout Australia except in the arid desert regions in the centre of the continent. Concentrations of feral pigs are highest in the wet and dry tropical areas in the north and east of Australia, particularly in the Northern Territory and Queensland (G. Wilson et al. 1992). There are an estimated 4–6 million pigs in Queensland with approximately 75% of the population thought to reside in the tropical north (McGaw & Mitchell 1998).

The study of human attitudes and actions towards species accorded the status of ‘invasive’, ‘exotic’, ‘alien’ or ‘feral’ in contrast to those deemed ‘native’ or ‘indigenous’ has been well

examined in the anthropological literature. This literature has been influenced by Mary Douglas' (1966) work that regards cultural norms as driven by a human need to order the world and to form and maintain particular kinds of boundaries and Claude Lévi-Strauss' (1969) insight that 'natural species are chosen not because they are "good to eat" but because they are "good to think"' (p. 162). Building on these traditions, many anthropological analyses have interpreted classifications of, and actions towards, species as being importantly influenced by a sense of belonging. Individuals may relate to and reshape their environment in such a way that plants, animals and people that belong to it are supported while those that are not may be expunged (see, for example, Trigger & Mulcock 2005). The increasing acknowledgement of a global flux of humans, plants and animals throughout history has highlighted the extent to which categories of what is, and is not, deemed to belong is not static; the categorisation of ecological objects and cultural identities that belong in any particular location is historically and culturally contingent (Trigger 2008).

Kay Milton (2000) draws upon Mary Douglas' interpretation that certain kinds of human action may be based in the need to maintain boundaries. In her chapter, 'Ducks out of Water', Milton examined whether the cultural practice of invasive species control could be understood as such an exercise. Milton analysed a campaign that took place during the 1990s to prevent the Ruddy Duck (a species of duck originally from North America and introduced to the United Kingdom in the 1940s) from spreading across Europe. She concluded that, in their actions, conservationists involved in the campaign were actively attempting to maintain three different types of boundaries: a particular taxonomic ordering between kinds of duck; the distinction between a classification of 'native' and 'alien' species, those that 'belonged' in Europe and those, from the United States of America, that did not; and, finally a distinction between human and non-human processes, an abstract yet highly important boundary to nature conservationists for whom such a distinction justified their core purpose.

Jean and John Comaroff (2001) presented an analysis of the public response to widespread fires that took hold on the Cape Peninsula, South Africa, at the turn of the turn of the 21st century. The cause of such events was attributed to the 'alien' flora, including Australian wattles (*Acacia spp*) that were popularly described as having 'colonized' the Cape. The Comaroffs argued that these fires provided a site for the articulation of xenophobic anxieties held by citizens of the post-racist South African State. Nature became an 'alibi' (p. 628),

providing an acceptable outlet for the otherwise unacceptable negotiations of ideas of nationhood, identity and belonging, and their analogues of exclusion and discrimination (pp. 649–651).

In the Australian context, Adrian Franklin (2006) has approached Australians' relationships with, and actions towards, animals from the perspective that animals are 'good to think' (Lévi-Strauss 1969). For Franklin, identity is the determining factor in prescribing the ways that individuals view and act towards animals. Franklin argues that exotic species control became an issue during the process he terms 'Australianisation'—the post 1950s development of Australian identity. During this period Franklin argues that the need to control exotic species

> was not simply about preserving the native species that so invoked nation: it subsequently became about eradicating those species introduced by the British during the colonial period, purifying an Australianness in the name of ecology or eco-systemic unity. (p. 140)

Drawing on the work of Ghassan Hage (1998), Franklin depicts the disciplinary logic of ecology as providing an alibi insofar as it justifies interventions such as species eradication. Franklin argues that 'species-cleansing of outsider categories of animal based on the logic and demands of ecology reinforces the solidarity of human nationalism. Nationalism has always thrived on the rhetorical advantages of ecology' (Franklin 2006, p. 17).

More recent work in the Australian context by David Trigger, Jane Mulcock and others, has de-emphasised the role of nationalism as a driver of attitudes towards invasive species instead focusing on the driver of belonging (Trigger et al. 2008, p. 1274). Trigger and Mulcock (2005) emphasise that this driver may be linked with a *sense* of belonging, a felt experience encompassing a range of emotions including those which may be described as 'spiritual' such as feelings of 'harmony, serenity and well-being' (p. 307 citing A. King, 1996 p. 343). Trigger et al. (2008) have subsequently expanded their focus beyond the level of specific species within environments to examine how individuals negotiate their own, and others, cultural belonging through the practice of ecological restoration, central to which are the processes of 're-naturing, re-valuing and repatriating' indigenous species and simultaneous 'impassioned rejection' of species deemed exotic (p. 1273). For these authors, this sense of belonging is taken to be synonymous with the concept of being indigenous or autochthonous, that is, to be rooted in place.

While drawing on these earlier theoretical perspectives, more recent analyses of invasive species problems have paid attention to the governmentality of environmental interventions (Foucault 1991). Most recently, Crystal Fortwangler (2009) and Adrian Peace (2009) have each approached disputes over exotic species management with this focus. In both these accounts, the authors show particularly how scientific knowledge has been brought to bear in places where it can conflict with local understandings and priorities. These writers have shown how such conflict has resulted in state management endeavours failing to achieve their intended outcomes. In particular, these case studies demonstrate that scientific classifications of animals as 'native' and 'exotic', and the rights afforded along with these categories, are not necessarily subscribed to by local communities who are subject to environmental interventions.

In 'A Place for the Donkey', Crystal Fortwangler (2009) focused on an issue involving the management of donkeys (*Equus asinus*) on the island of St. John in the US Virgin Islands. In line with previous analyses of invasive species issues, Fortwangler argued that species categorisation, particularly as 'native' and 'exotic', were closely linked with notions of belonging, place and identity. While the Parks Service considered donkeys to be 'exotic' and thus targets for removal, those who identified themselves as St Johnians, residents of African-Caribbean descent and/or those who were born on the island, characterised donkeys as 'our wildlife' (p. 210) that belonged to the island in the same way they did. This dispute over the treatment of donkeys provoked emotional reactions from both residents and tourists and this 'emotionalism' (p. 214) prompting the Parks Service to make explicit that, for them, the issue of donkey management was solely a biological matter. Residents and tourists displayed affection for the donkeys and tourists who witnessed acts of control wrote letters to the editor of the local newspaper expressing their 'sorrow, anger, fear and confusion' at witnessing the outcomes of control measures (p. 215). Fortwangler concludes that the local cultural significance of the donkey and the emotional responses to the prospect of culling have 'helped to thwart a control programme and keep ecological science from dominating Park Service policies' (p. 216). Consequently minimal donkey control took place in spite of ecological evidence that they are responsible for environmental degradation.

Finally, Adrian Peace's account of disputes over the management of feral horses in the state of South Australia, 'Ponies out of Place' (2009), has highlighted the unpredictability of governance and flow of governmental power exhibited in acts of environmental management. In this dispute, feral horses were legislated as 'animal matter out of place' (p. 53) for state environmental governance institutions, but for local residents of Coffin Bay, the 'Coffin Bay Pony' was a rightfully placed species that was considered to have adapted to the area's local ecology. Peace argues that this environmental dispute exemplified the more general process by which attempts to employ, what he terms, 'scientistic' and 'technical' solutions by environmental management bureaucracies may be thwarted by 'local' priorities (p. 53). Moreover, in spite of inequalities regarding legislative power and resourcing, the relationship between (centralised) government institutions, who were ultimately unsuccessful in their endeavours, and local actors was not necessarily uneven. In particular, Peace describes how government power was undermined by a local group who were well organised and who simply 'refused to accept the premises that informed the authorities' position' (p. 70).

1.3.2 Belonging and indigeneity: Knowledge, perception and identity

Belonging has been a central concept of focus in the anthropological literature on invasive species management. Belonging, as a *sense*, has been tied to notions of belonging–in–place and thus similar, or synonymous, to ideas of indigeneity or autochthony (Dominy 2001, Trigger & Mulcock 2005, Trigger 2008). Francesca Merlan (2009) defines the concept of indigeneity as '[implying] first-order connections (usually at small scale) between group and locality. It connotes belonging and originariness and deeply felt processes of attachment and identification, and thus it distinguishes "natives" from others.' (p. 304) Merlan distinguishes between two ways indigeneity has been defined that she terms criterial and relational. Criterial definitions are those that describe indigeneity with respect to a set of criteria or properties that an individual or group possesses; relational definitions 'emphasize grounding in relations between the "indigenous" and their "others" rather than in properties inherent only to those we call "indigenous" themselves.' (p. 305)

Merlan explicitly distinguishes between the political and phenomenological elements of indigenous identity. Thus, her definition opens conceptual space for the exploration of how indigenous identities, and expressly feelings of indigeneity, may develop. However, her division between 'relational' and 'criterial' accounts appears to conflate with distinctions between an external versus internal reading of identity. Specifically, Merlan's 'relational' division focuses on external—social and political—influences, while her 'criterial' division conflates the categorical fixing of an identity with an attribution of one's internal state of being. Merlan's 'relational' account specifies 'others' as specifically social others, however, as Trigger and others have noted, indigeneity may be conceived as a relational process with respect to features within the natural environment. Moreover, these relational processes may give rise to those elements of indigeneity that Merlan describes as 'criterial'.

Insofar as it is unsuccessful in demarcating a conceptual separation between the political and phenomenological, Merlan's definition does not leave room for including those who may develop an indigenous phenomenology. However, if indigeneity cannot be properly theorised as anything other than the result of overlapping political and environmental relations, the phenomenological elements associated with belonging may be unbound from it. In other

words, as an insufficient condition for indigeneity, these phenomenological forms may be ascribed to new typologies of non-indigenous attachment.

In the remainder of this section I present theories of perception and knowledge that have informed characterisations of indigenous and non-indigenous cultures. Highlighting that a state of being that may be labelled indigenous occurs as a part of a process (Trigger 2008) these theorists raise the question of how a human–environment relationship that might be termed indigenous may be formed or maintained. On the basis of the theory presented, I suggest that different knowledge making practices, as well as technologically mediated engagements with environments are important in informing particular human–environment relationships and thus identity and sense of belonging. In the following section I relate this discussion of indigenous and non-indigenous identities to the conceptualisation of endogenous and exogenous identities that I develop.

Interested in the ways humans perceive their environment, Timothy Ingold (1993) has presented a typology of indigenous versus western modes of perception. Ingold demonstrated the similarities that existed in perceptions of human relationship with the environment as held among contemporary (indigenous) hunter–gatherers and pre-Enlightenment Europeans; both held a perspective of the environment where the world was conceived as a sphere, a life-world that the human subject lives within. By comparison, the western notion instigated by Immanuel Kant, conceived of the world as a globe—'a world divorced from life, that is yet complete in itself' (p. 35). Ingold advanced the concept of 'dwelling' (Ingold 1996, p. 121) as a characteristic of indigenous hunter–gatherers' perceptions of the environment. Ingold's argument that the western belief system is centred around a conceptual separation between human and environment is supported by numerous anthropological studies of knowledge where cross-cultural comparison, most notably derived from the Eastern Highlands of Papua Gillison 1980, Strathern 1980), and interrogations into the history of western philosophical thought (Bloch & Bloch 1980, Jordanova 1980) has assisted in uncovering the cultural specificity of particular Euro-American patterns of thinking.

Adopting the classificatory division of modern and non-modern, Bruno Latour's (1993a) work has distinguished between two kinds of thought processes that mirror Ingold's description. Latour describes the modern thought process as one that creates objects,

propositions and artefacts, out of mixtures of ‘nature’ and ‘culture’, through a process he calls translation. To maintain the modern constitution however, every new entity constructed is subject to what he terms purification, where it is separated and reified to fit within the category of either ‘non-human Nature’ or ‘human Culture’. Latour argues that this mode of dividing knowledge according to the categories of ‘nature’ and ‘culture’ developed alongside the birth of the empirical scientific method and served an important sociopolitical purpose. This division allowed for the creation of propositional objects—‘naturalized objectified facts’ (Latour 2004b, p. 227)—that could be considered separately from the prevailing religious and political ideologies of the time (Latour 1993a, Latour 2004a). These scientific facts of nature were objects, freed of their social ties and religious encumbrances, that could be invested with power to ‘speak for themselves’ (Latour 1993a, p. 29) and thus had an obdurate quality that forced consensus.

Within the tumultuous historic period of their development, these newly founded ‘facts’ were used to question and overturn the religious and ideological orthodoxies from which they had been disentangled (Latour 2004b). The ability of these facts of nature, scientific facts, to force consensus became a core element of modernity. In contrast to this modernist mode of thought, Latour characterised non-modern societies, much as Ingold’s hunter-gatherers, as not objectifying knowledge. Non-moderns, Latour argued, had no difficulty conceiving of themselves as existing within a human–non-human hybrid network (Latour 1993a). Indeed, a close reading of Ingold’s (1993) work shows that the formulation of his typology is informed by an analysis of western academic writings. Both Latour and Ingold use their cross-cultural insights to question aspects of western epistemic practice.

Recent scholarship, particularly of hunting cultures in settler descendant societies (specifically North America and New Zealand), has questioned the validity of a categorical distinction between indigenous and western ways of perceiving the environment (Boglioli 2009, McLeod 2004). In particular, Marc Boglioli (2009) has shown that North American hunters hold a view on human–animal relationships that is more similar to Ingold’s description of indigenous hunter–gatherers than to their urbanised non-hunting western compatriots. On the basis of his research Boglioli critiques Ingold’s typology as an example of ‘ecological occidentalism’ (Boglioli 2009, p. 46, building on Carrier 1992). Marilyn Strathern (1996) modified her earlier position to argue that an objectified mode of thought,

previously described as western or modern, is not endemic to Euro-American thought in general but a specificity of the western academic tradition; and James Carrier has argued that particular abstract forms of reasoning are privileged by socioeconomic and institutional conditions within society and are thus linked to identity (Carrier 2001).

1.3.3 Knowledge, perception and concern

As Boglioli (2009) comments, there has been some tendency to valorise indigenous ways of knowing, and relating, to the environment in contrast to western ways of knowing and relating to environments, particularly as it may prescribe certain forms of attachment to, and care for, the environment (see, for example, Escobar 1999, Strang 1997). Ingold has argued that the western conceptualisation that instituted a cosmology of the environment as a globe, from which humans could take a separated perspective, dictates a particular normative conception of the human relationship with the environment where:

> [I]t can become an object of appropriation for a collective humanity […] since our very humanity is seen to consist, in essence, in the transcendence of physical nature, it is the world that belongs to us. Images of property abound. […] Much of the current concern with the global environment has to do with how we are to 'manage' this planet of ours. That it is ours to manage, however, remains more or less unquestioned. […] It implies that human beings can launch their interventions from a platform above the world, as though they could live *on* or *off* the environment, but are not destined to live *within* it. (Ingold, 1993 p. 39)

Carrier (2003) has been careful to point out that abstract modes of thought do not necessarily equate to emotional detachment and, along with other scholars (Miller 1998, Strathern 2002, Milton 2002), has contributed to theorising that explains the interplay between knowledge, perception, emotion and prescriptive action. Carrier argues that the process of abstraction in reasoning, when carried to its extreme, may lead to virtualism where descriptive knowledge both shapes an agent's perception and guides their prescriptive behaviour (Carrier 1998). Virtualism occurs when highly abstract forms of knowledge shape the lens through which an agent views the world so that an agent considers these abstractions as models of how the world ought to be. Carrier describes that highly abstract ways of thinking

> becomes virtualism when people take this virtual reality to be not just a parsimonious description of what is really happening, but prescriptive of what the world ought to be; when, that is, they seek to make the world conform to their virtual vision. (Carrier 1998, p. 2)

Carrier initially developed the theory of virtualism in respect to an analysis of western economic practice. Specifically, Carrier described virtualism as a stage in a historical process of dis-embedding that separated the economy from wider social relations (Carrier 1995, Carrier 1998). Marilyn Strathern (2002), however, has linked the concept of virtualism more closely to the knowledge practices associated with formal education and both Daniel Miller (1998) and Strathern (2002) have described audit as a bureaucratic manifestation of virtualism's conflation of what is and what ought to be.

Kay Milton (2002) has highlighted the importance of emotion in the process by which a human subject comes to know, perceive and act towards their surroundings. Milton has challenged what she considers to be the pervasive belief in western society that there exists a dichotomy between emotion and rationality. She argues that emotion is a necessary part of the way humans produce knowledge at both the basic level of human navigation through the environment, and at formal levels of education. Individuals learn information about their world through direct perceptual engagement with their environment and emotions play a crucial role in this process. Emotions influence perception in quite basic ways, by defining objects of interest that thus guide what an individual might perceive in their environment. Emotions are also inherent to the evaluative process that governs attraction and avoidance responses (pp. 64–65). Furthermore, Milton argues that this relationship between knowledge and emotion is such that knowledge can induce emotional responses for a subject towards their environment. Milton suggests that it is through this process that affective attachments towards a subject's environment can develop.

1.3.4 Impacts of technologies on human–environment relationships

The role of technologies in mediating and reconfiguring human–environment relations has been absent in anthropological accounts of invasive species management, a matter this thesis seeks to address. At a general level, Latour (1993a, 1993b, 1996) argues that non-human actors, including technologies, are both important social ties and exert agency thus shaping the human actors with whom they interact. Studies that have focused on developments in genetics and bio-technology have shown how intellectual and technological developments can reshape cultural norms about kinship and family (see, for example, Strathern 1992), property (Strathern 1996) and the broader environment (Escobar 1999). Ingold (1993)

suggests that modern technologies may reinforce the western ontology stating that: 'technology provides the principles for human action *upon* it' (p. 41 italics in original). Eric Higgs (2003) argues that the increasingly technological focus of ecological restoration may limit human engagement with the environment as well as restricting the incorporation of diverse forms of knowledge about nature into restoration. Higgs is critical of this trend, concerned that the technological dependency of ecological restoration activities risk contributing to the production of an increasingly reified form of nature.

1.4 Characterising Endogenous and Exogenous Identities

The anthropological theory this thesis builds on, insofar as it is concerned with the cultural driver of belonging is situated within theory that has developed and critiqued the meaning of indigeneity. While indigenous ways of perceiving and knowing the environment were initially contrasted with western modes of perception and knowledge, latter accounts focusing on the process of identity formation have seen the concept of indigeneity, contentiously, applied to individuals within settler-descendent societies (Dominy 2001, Trigger & Mulcock 2005). Adopting the position that identities are processes that exist within networks, reproduced in relation to their changing environment (Čapek 2006) and mediated by knowledge and technology, I seek to reframe this debate slightly by characterising two kinds of identity that I will term endogenous and exogenous.

OED Online (2010) defines the term endogenous as meaning 'growing from within' in contrast to the definition of exogenous which is given to mean 'growing by additions on the outside'. In comparison, the term indigenous is defined as 'born or produced naturally in a land or region; native or belonging naturally *to* (the soil, region, etc.)'. One of the striking differences between the term endogenous and indigenous is that endogenous denotes a process while the term indigenous denotes a fixed state. My adoption of this terminology not only attempts to avoid the political connotations of ascribing indigenous status to non-Aboriginal actors, but also fits nicely with an understanding of identity reformation as a relational process and one that is both intellectually and technologically mediated. My characterisation of an endogenous identity will be developed with reference to prior ideas of what it is to be indigenous or non-modern; an exogenous identity will be referenced to those previous depictions of what it is to be western or modern. Ingold (1993) provides some

precedence for the use of these terms. Ingold describes modes of action that he labels endogenous and exogenous, stating that

> change figures as what is *done* to the planet by its present [western] owner-occupiers, human beings. It is thus exogenous rather than endogenous, not [the indigenous view of] nature transforming itself, but nature transformed through the imposition of non-natural, human design.' (p. 40)

Attending to the relationships individuals have with their environment necessarily overlaps with questions of human relationships to space and place (West 2006). I thus offer two further definitions in order to assist the reader. Throughout this work I make a distinction between space and place. When I use the term space, I refer to the way a subject conceptualises the size and scale of their surrounding environment as well as the perspective the subject takes of themself in relation to their environment. I agree with Paige West (2006) who describes space as a process (p. 28). Space is produced and then engaged, and thus reproduced, through the way a subject perceives and represents themselves in relation to others and in relation to their environment. When I refer to the term place, again following West, I am referring to a specific location, such as a town or a home that is fixed, and possibly named, as an object. West (2006, p. 30) states that '[p]laces are points on a map that are the 'locus' of particular practices, social relations, and power relations' and, I would add importantly, places, unlike space, are locations to which a subject may form an affective attachment.

Aside from emphasising the role of identities as networked processes, the typology of endogenous and exogenous identities differs from the commonly used spatialised typology of 'urban' versus 'rural'. The primary difference between this and an endogenous and exogenous typology is in its focus on modes of place attachment rather than locale as a defining difference. In proposing this typology I seek to build on Ingold's model by suggesting that the typology he presents could be better defined by certain of its features rather than problematic cultural classification he assigns. The extent to which localist, dwelling, identities exist within western cultures is not disputed by Ingold (1993). Nevertheless, his conceptualisation of what is dominantly 'western' does persist its hegemony by obscuring substantial sectors within western societies who dissent from such perspective—notably, settler descendant hunters (Boglioli 2009, McLeod, 2004).

1.5 Literature Review: Environmental Conflict

I intend to show how these two kinds of identities have developed in ways that are oppositional to one another. In this section I review previous studies of environmental conflict and conclude with a discussion of the methodological considerations of a study of conflict highlighting the importance of open-ended forms of enquiry. Beginning with social constructionist approaches to the analysis of conflict, this review builds to consider Latour's (2004a) critique of multinaturalism with reference to empirical studies from North America and Canada.

1.5.1 Social constructionist approaches

Theresa Goedeke and Anne Herda-Rapp (2005) argue that conflicts over wildlife are often driven by differing social constructions of wildlife held by different interest groups in any given context. Moreover, these authors suggest that different social constructions can inform conflicting desires for management. As an example, Goedeke (2005) has shown how different social constructions of the North American River Otter (*Lutra canadensis*) were engaged by different 'claims-makers' in disputes over the management of otters in Missouri, USA. Goedeke outlines how the otter was constructed in three ways: 'a predatory devil' by anglers and pond owners, 'playful ecological angels' by protection activists and a 'useful species' by the department of conservation staff responsible for their management. These varying constructions were engaged in, and developed throughout, controversies over how to manage an otter population. Goedeke highlights the ways that these different social constructions were produced relationally as each group engaged in this controversy sought to define the 'problem' in such a way as it might lead to the realisation of their desired solution in practice: anglers and pond owners wanted otters removed, protectionists advocated a non-interventionist approach, while management staff advocated sustained harvest in order to maintain 'balance'.

In his account of a dispute over the management of deer at Quabbin Reservation in Massachusetts, USA during the late 1980s and early 1990s, Jan Dizard (1994) found that conflicts over appropriate culling of deer were founded in disputed conceptions of nature. In this case, a large deer population presented a threat to one of Boston's main water supplies.

Not usually open to hunting, managers of this reservation were faced with the need to thin the deer herd and, after ruling out a number of other options, made the decision to use licensed hunters. Managers of the reservation, and those who supported them, were in favour of killing deer and, in spite of a general dislike for hunters, supported hunting as a means of deer control. Opposing this course of action were a diverse group of people, including those who were categorically opposed to killing animals. Those critical of the hunt argued that nature should be left alone and, free of human interference, would be self-regulating. Moreover, this group argued that nature had the right to be left alone. In contrast, supporters of the hunt understood nature to be inclusive of humans and human activity and consequently ascribed humans the responsibility to intervene in this case. In his own words, Dizard concluded that:

> [e]veryone, even the most enthusiastic and unabashed boosters of management among the hunters, acknowledged the urgent need to find a more sustainable relationship between humans and the environment. […] What was beyond reach, however, was an agreement on the meaning of nature. (Dizard 1994, pp. 170–171)

The recognition of alternative social constructions of natures fits within a 'perspectivist' epistemology (Descola 1996, De Castro 1998), which Viveiros De Castro describes as:

> an indigenous theory according to which the way humans perceive animals and other subjectivities that inhabit the world—gods, spirits, the dead, inhabitants of other cosmic levels, meteorological phenomena, plants, occasionally even objects and artefacts – differs profoundly from the way in which these beings see humans and see themselves. (De Castro 1998, p. 470)

Perspectivism is given as an alternative epistemology to 'realism' and 'relativism' and critiques the notion of, what Latour (2004a) terms, 'mononaturalism'. The critique suggests that a mononaturalist ontology is incoherent, particularly, when juxtaposed against accepted ideas of 'multiculturalism'. Adopting a perspectivist epistemology, theorists such as Descola, have proposed the utility of a 'multinaturalist' ontology (Descola 1996).

The concept of multinaturalism merges especially well with the hegemonic notion of the stakeholder—a social ordering of discretised groups who are ascribed different interests and motives with respect to a particular environmental issue (see, for example, Robinson, Smyth & Whitehead 2005, Hytten & Burns 2007). However, as Latour (2004a) notes, the recognition of multinaturalism may simply create a deferred problem in practice—what does one do, for example, if the multiple constructions of Nature lead to mutually incompatible ideas about appropriate action? Moreover, as Tsing (2005) shows, making legible the differences that exist between people regarding nature may not always be beneficial. She

shows, by tracking an example of a successful activist campaign, that mutually contradictory visions of Nature, because they were not exposed as such, led to successful collaboration and a mutually beneficial outcome.

1.5.2 Knowledge and identity

Whilst the concept of multinaturalism has been proposed and critiqued within anthropology, the mononaturalist ideology persists through the normative scientific belief in a universalistic science of nature. In spite of the demonstrated malleability of scientific knowledge about nature, and a high degree of overlap in scientific and non-scientific understandings of natural processes in some cases, a cleavage between scientists' beliefs about nature and their views of non-scientific beliefs of nature and non-scientists infuses numerous environmental disputes. Interrogations of how scientific knowledge operates in environmental disputes has uncovered the importance of attending to relations of power and identity and the social production of, and contests over, nature.

The increasing politicisation of science has been a key feature of contemporary environmental disputes where anthropological analyses have shown how scientific 'facts' are both increasingly contestable and highly malleable and may be consciously appropriated and/or resisted as it serves an individual or groups' ends (see, for example, Dunk 1994, Peace 1996, Satterfield 2002). Latour (2002) argues that there has been a broad societal shift in the latter part of the 20th century from the condition of modernity that held matters-of-fact to be unquestionable objects of thought to one where the authority of scientific 'facts' have been destabilised. Latour writes:

> Matters of fact were supposed to bring agreement by appealing to the objective nature out there; but instead many of the former facts have become controversial issues that create more dissent than agreements, thus requiring another quasi-legal or quasi-political procedure to bring closure. Facts are no longer the mouth-shutting alternative to politics, but what has to be stabilized instead. (Latour 2002, p. 21)

Societal discontents with science, however, have not dissuaded many scientists themselves from remaining trenchant in their adherence to universalised and naturalised matters of fact (Sokal 2001).

Paul Robbins (2006) and Thomas Dunk (1994) have both argued that disputes over the environment may be determined by pre-existing socioeconomic and regional differences through which knowledge may be contested. Investigating disputes over the logging of forests in northern Ontario, Canada, Thomas Dunk (1994) found that while forest workers and environmentalists shared many concerns over the state of the environment, the forest workers nevertheless constructed their identities in opposition to those of environmentalists. Dunk argued that forest workers constructed an environmentalist identity through a set of pre-existing class and regional differences. This relational construction of oppositional identities impeded social cohesion over environmental matters. Dunk described this process as an example of bricolage, in which 'one is forced to use the end results and leftovers from previous discourses as the tools and raw materials from which to make sense of a different situation' (p. 16). Thus,

> the [forest worker creates] a chain of equivalence—southerner, city-dweller, middle-class, abstract (or perhaps ignorant), environmentalist—which is juxtaposed to another chain—northerner, local, worker, practical (common-sensical). (Dunk 1994, p. 28)

In this context environmentalists' knowledge was presented as formal and abstract and interpreted, by forest workers, as 'empty' in contrast to their 'real knowledge' based in common sense and direct experience (p. 28).

Terre Satterfield (2002) presents an account of conflict, between forest workers and environmentalists over old growth forests in Oregon, USA during the early 1990s. Satterfield argued that activist identities formed situationally in order to contest the future of these forests. Each drew upon dominant, and thus shared, cultural forms—such as science and scientific knowledge—deliberately appropriating, reshaping, and reasserting these forms as a vehicle through which to advance their world views and have their aspirations realised in practice. Satterfield describes how this political use of cultural forms manifest in a 'talked-past-yet-sounded-similar' phenomenon (p. 7) that characterised her fieldwork dialogues. Through scientific discourse environmentalists advanced an 'abstract science [...] [that] elaborates upon the complexity of nature's mysteries' (p. 83). In contrast the scientific discourse advanced by forest workers, who placed value on common-sense knowledge, supported applied science and the technologies that resulted from such pursuit.

More recently, in the context of management issues over migratory elk in Northern Yellowstone, USA, Paul Robbins (2006) has found that in spite of a 'remarkable similarity in environmental discourses espoused by hunters and environmentalists' (p. 198) these groups could not coalesce in reaching a collaborative solution on this management issue. Robbins suggests two reasons for this. First, there was a subtle yet important divergence in views between environmentalists, who viewed nature as a non-human wilderness, and that of hunters who held that hunting by humans was 'natural'. Second, he noted what he described as a class-based distrust between these two groups exacerbated by a decline in the political and economic influence of hunters. This decline in political and economic power had been accompanied by a decline in the value of hunters' knowledge. Simultaneously, there had been an elevation in environmentalists' respect for landowners, even though their views on management differed to a greater extent. Robbins showed how environmental policy was shaped by power relations that elevated and denigrated perspectives in a way that did not correlate with the degree of similarity in views between groups. Robbins concluded that in order to understand how environmental policy is produced and contested requires attention be paid not only to differences in understandings of nature but equally to the 'systems of power and knowledge that also form and reproduce identity' (p. 198).

1.5.3 Nature as a vehicle for the (re)production of culture, society and identity

Brought together, the case studies presented here uncover how human-environment relationships are intimately and non-hierarchically entangled with social relationships and processes of social cohesion and division. Inherent in the anthropological analyses of invasive species interventions presented is an emphasis on the situational differences that exist between the beliefs an individual or group holds about society, and individuals within it, and the beliefs that are held about the environment and species within it. Individuals and social groups not only argue over the environment, but they may argue through it. Moreover, nature can influence the reshaping of cultural norms. As Trigger and Mulcock (2005) describe: 'who and what "belongs" is Australian landscapes and ecosystems, who and what can be "indigenous", and who gets to decide is tied to how people think about cultural identity.' (p. 316) The Comaroffs' analysis argued that nature can be an 'alibi', providing a

platform for otherwise unacceptable societal negotiations to proceed (Comaroff & Comaroff 2001).

Rik Scarce (2005) formalises this dynamic, where natural entities allow a platform for societal negotiation, in his description of tensions within the community over wolf re-introductions in Yellowstone National Park, USA. Scarce found that disputes over wolves were closely linked to wider social anxieties. Scarce concluded that the practice of socially constructing nature, and the species within it, was an important endeavour entwined with the reformation of community: 'When Community members socially construct Nature, they remind themselves of the core of what matters to the social "us" – to us together, to us as community.' (p. 142)

Two methodological considerations arise out of this review: first, the material presented suggests an avenue of enquiry that de-emphasizes an analytic focus on (oppositional) cultural products, such as cultural constructions of nature, in favour of a focus on the social and socioenvironmental processes that produce oppositions. This perspective merges nicely with a study of technologies insofar as the implementations of new technologies may impact upon social relationships (Bell, Blythe and Sengers 2005). Second, in approaching questions of contestation with the view to finding out why a particular dispute persists, these case studies highlight the methodological complexity of studying conflict. Because disputes may be between people over nature, between people through nature, between people and nature or between people as it is caused by nature, the study of such conflict is dependent on open-ended forms of enquiry. In other words, investigating environmental conflict cannot rest on the researcher's judgement of what might be similar or different between disputing or differing parties; instead the researcher must attend to which identifiable similarities and differences are salient at a given juncture before working to unravel the conditions that have produced the articulations of difference. The study of conflict is not a study of difference *per se*, rather, it is the study of the articulation of difference.

1.6 Methodology

This study is directed by the methodological implications highlighted in section 1.6—the process by which salient similarities and differences between people and ideas are articulated is a complex sociocultural process. Attention to this complexity highlights the importance of qualitative and ethnographic approaches to the study of environmental management problems. Ethnographic approaches value open-ended forms of enquiry (Strathern 2002), the contexts in which ideas are produced and articulated (Melhuus 2002) and attend to the situational and relational nature of their production (Van Velson 1967). Moreover, I suggest that studies of management should not necessarily be concerned with the study of human populations however these may be bounded. Instead, study subjects should be derived by working from the locus of management practice and traversing the networks that feed (and do not feed) ideas, materials and resources into, and out of, management thinking and practice (Henry 1999, Latour 1996, Marcus 1995).

Methodologically, my approach in this study has been to identify and follow a number of key 'issues of debate' (Henry, 1999) that have been articulated by research participants in discussions about feral pig management. I have conceived of this as a form of situational analysis, an approach that is focused on social process and the situational negotiation and use of cultural norms (Van Velson 1967). Each 'issue of debate' presented itself as a situation to be followed, described and contextualised. Dependent on the particular issue, this pursuit has required me to engage with a variety of actors, organisations, technologies, policy documents and animals. Thus this methodology may be labelled a type of actor-network theoretical approach (Latour 1996). Because each issue required that I follow trails that cross time and space, the resultant ethnography is an example of a multi-sited ethnographic enquiry (Marcus 1995).

I consider ethnography to be essentially committed to a naturalist position in that it attempts to apprehend social actors in their 'natural' setting and the social world in an anti-reductionist and holistic manner. Within this conception of ethnographic endeavour, a high value is placed on extended participant observation. Increasingly, and particularly in the pursuit of multi-sited ethnography, methods such as open-ended or ethnographic interviewing have become more prevalent. Hammersley and Atkinson describe ethnography as a method in which:

> [t]he ethnographer participates, overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, asking

> questions; in fact collecting whatever data are available to throw light on the issues with which he or she is concerned. (Hammersley & Atkinson 1989, p. 2)

This classical description of ethnography is an enduring one (Hannerz 2003). Ulf Hannerz (2003) contrasts this traditional model of fieldwork with that of modern ethnography, particularly multi-sited ethnography, which may emphasise techniques such as interviewing over the more traditional method of long-term immersion in a culture. Hannerz argues that the increasing utilisation of individual interviews may be appropriate in part due to the 'settings of modernity' (p. 211) within which modern ethnographies are situated. To illustrate this point, he poses the question '[w]hat do you do when "your people" spend hours alone at a desk, perhaps concentrating on a computer screen?' (p. 211) The nature of this research topic, focused on understanding the diverse factors that influence conflicts over feral pig management which, realistically, constituted only a minor aspect of the daily lives of my participants meant that interviewing with restricted participant observation of particular activities was the most sensible approach.

This focus away from long term participant observation does not mean that context is not important; it means that, due to the fact that multi-sited enquiry traverses multiple sites of engagement, context may not a given. Marit Melhuus (2002) discusses how studies in which context is not a given present a challenge for ethnographic interpretation. Melhuus compares her early fieldwork that took place in a Mexican village with her subsequent study of involuntarily childless couples in Norway. In the former study, the village provided a shared (and I would add bounded) context between her and her informants allowing her to follow trails and develop interpretations. In the latter study there was no such shared context between her and her informants; her engagement was restricted to interviews with couples and participation in support groups and meetings. In order to develop her interpretation Melhuus found that she was required to draw upon media sources (Melhuus 2002). I follow a similar approach in this study, utilising media to develop interpretation. I should note however that my use of media also reflects the extent to which informants themselves appeared to be engaged with media and in my interviews with informants we often discussed local news as it was presented in the media.

1.6.1 Data collection and methods

This thesis is the result of qualitative ethnographic inquiry carried out over a four year period commencing in 2006 and finishing in 2010. During this time I took regular trips to Far North Queensland: twice in 2006 and 2007 and once in 2008 and 2009. Each visit varied from one week to three months, and in total I have spent around six months in this region. Additionally, I spent approximately two to three months attending numerous workshops, conferences and meetings with ecologists and ecologists-in-training throughout Australia. While I have increasingly recorded my observations of these events as field notes, much of the information derived from these experiences is 'unusable data', data that has necessarily informed my insights and contributed to analysis but which I do not draw upon explicitly (Hamilton 2009). Another source of unusable data was information gathered from my participation in two pig hunting web fora. I was given permission by the moderators to participate in, and observe, these groups on the condition that I did not explicitly use any information contained on the website.

Although my stays in Far North Queensland were fragmented, during each visit I was able to re-connect with participants I had met on previous trips to revisit and discuss various relevant issues. I have had continued contact via email with some through to the time of writing. Part of the reason for this fragmentation in fieldwork was due to difficulties obtaining human ethical clearance to participate in, and observe, hunting practices.[2] I was unable to pursue this aspect of my research until my final trip in 2009 when I spent three months in Far North Queensland devoted almost solely to the study of hunting practices. In between trips to Mossman I conducted interviews from Brisbane with representatives from animal welfare groups and hunting organisations who are based in other parts of Australia, as well as conducting a limited number of follow-up interviews via telephone and email.

Over the course of this project I conducted 40 formal interviews (excluding follow-up interviews), including group interviews, 31 of which were audio-recorded. In addition to this, I have participated in and taken notes of a number of informal conversations. While hunters and managers were initially my core groups of interest, as this study progressed I increasingly engaged with ecologists, local Greenies and others in the general community as opportunity,

[2] In the denial of an application one ethics committee member commented: 'The activity of pig hunting (with guns and knives) is contentious. Apart from the element of risk to participants, the issues of animal welfare and the broader community standards need to be considered. Although the researcher proposes to "observe" a hunt and not be physically involved in the actual hunt itself, it may be argued that her voluntary presence as an observer nevetheless [sic] compromises her integrity and makes her an "accomplice" to a contentious activity.'

and issue of study, dictated. I recorded detailed field notes of the pig hunting, trapping and ecological fieldwork practices I participated in and/or observed. Iterative collection of sources has allowed me to thicken my understanding and interpretation of each issue over time. Consistent with a post-structural approach my construction of this ethnography relies heavily on the presentation of individual case studies and narratives which I then seek to contextualise. Consequently, I name only a small number of informants with whom I engaged, all referred to by pseudonym. All quotations of written sources are presented with grammar and spelling as per the original. This approach, in which a small number of individuals are followed, utilises ethnographic description principally to inform a theoretical exposition: to show the *existence* of two kinds of identities that are reproduced within a cluster of differently spatialised overlapping identities.

In addition to semi-structured and open-ended interviewing and participant observation, the review of documents has been an important method of data collection. The collection and review of texts has included a review of policy documentation, relevant legislation, media—particularly the *Port Douglas and Mossman Gazette* and *The Cairns Post* newspapers and the Australian pig hunting magazines *Wild Boar* and *Bacon Busters*—as well as academic ecology and management literature.

1.7 Outline of Chapters

Chapter 2 *History and Politics of the Wet Tropics World Heritage Area (WTWHA) and the (former) Douglas Shire* situates the issue of feral pigs and their management within their sociopolitical context. The reader is introduced to the space of the Wet Tropics, and particularly to the (former) Douglas Shire area that is the geographic focus of this thesis. Residents in this region have been engaged in a series of disputes over the environment since 1978 and these disputes have led to the production of a set of oppositional identities among residents in the area that were initially characterised as Locals versus Greenies. Scientific knowledge has been influential in shaping this region's environment and the WTWHA is a production of an expressly scientific nature. The scientific importance of this area has fostered a shifting geography of property ownership highlighting the increasing influence of urban Australians on this region. Within this region, that is divided over its environment, common agreement that feral pigs are a pest makes this species' management an important

platform for disputation. Aside from the political utility this species affords, technologies of pig control have been implicated in broader environmental conflicts.

Chapter 3 *'They're Government Pigs': Space, Movement and Matters of Fact* addresses a key point of contention over certain 'facts' regarding feral pig location and movement within the Wet Tropics environment as it was expressed through a particular set of conversations held between a Greenie and a Local. Interpreting this conversation shows how these two groups relate to other groups of interest in this study—Hunters, Managers and Ecologists—and thus provides a sketch of the sociopolitical and sociospatial relationships that characterise this region. Through this dispute, different concepts of space and place help subjects conceptualise how feral pigs move, or do not move, within their environment—a matter that is important in disputes over moral and fiscal responsibility for management. This debate carries narratives of endogenous and exogenous belonging among these clusters of identities that directly relate to contests over ownership of, and exclusion from, the WTWHA.

Chapter 4 *Pest or Resource? Pig Management Institutions and the Contested Economy of Control* presents an account of changes in feral pig management institutions in the Wet Tropics over the past one hundred years. Changes in management have reconfigured a number of social and human–environment relationships in the region as new technologies of control have been introduced under changing economic conditions of management. These changes have impacted upon Hunters in particular, as this group continues to lose its legitimacy as managers. Overall, the trajectory of management serves to lessen the direct engagements between humans and the environment with these engagements being supplanted by monetary transactions. The different perspectives that are expressed correspond to endogenous and contrasting exogenous views of the economy and highlight the cultural complexity of pestilence as it relates to economic value.

Chapter 5 *What Constitutes Legitimate Killing? Pig Hunting, Trapping and Poisoning Practices and the Negotiation of Animal Welfare* presents descriptions of the range of pest control and hunting practices that are currently carried out in this region. Building on chapter four, which described how technologies reconfigure social and socio-environmental relationships through the reconfiguration of labour requirements, this chapter presents the factors that have influenced the development and application of particular technological

complexes. The practices associated with each type of technology reproduce a specific kind of human–animal relationship that inform different moral norms regarding the treatment of animals for the practitioner. The production of pig control technologies, mediated through engagements between animal welfare groups and scientists involved in research and development, is a collaborative activity based in shared beliefs in science and bureaucratic process rather than a shared set of 'values' regarding the appropriateness of specific management activities. Descriptions of the diverse pig hunting practices that persist in the region demonstrate how these practices are reshaped by political forces, geography and technological innovations. Hunters, who exhibit a particular kind of endogenous identity, are placed in a contradictory position in regards to the law that has been shaped by highly abstract and virtual understandings of animals.

Chapter 6 *Who Cares? Intention, Action and Conservation Ideology* examines the ways in which scientific knowledge informs affective attachments for Ecologists, Greenies and Managers in the region, motivating and defining their actions towards the environment—actions that can be identical, in practice, to those of Hunters. Greenies' suspicions of Hunters' claims to be concerned about the environment stem in part from their own beliefs that define purposeful action. Analysis of the knowledge and practices of Ecologists, Managers and Greenies shows how scientific thought influences the production of a particular form of exogenous identity. Moreover, an exogenous identity is characterised by an individual's ability to develop affective attachments to an environment that is not predicated on direct engagement within it. Whilst, in conjunction to the analysis presented in chapter five, this analysis points to important distinctions between two modes of human–environment relationship, Hunters are not able to leverage a recognition of legitimacy as their Aboriginal counterparts are able thus contributing to their increasing marginalisation and deviancy with respect to key legislation.

Chapter 7 *A Deviant Nature: Cassowaries, Pig Hunters, Pythons and Crocodiles and the Negotiation of Belonging* re-contextualises the specific issues related to the management of feral pigs, and the future of hunting in the Wet Tropics, within the broader disputes that continue to define this region. In so doing, a last issue of debate is introduced, relating to claims that hunters are 'irresponsible' with regards caring for the region's native wildlife. This chapter examines the situational reproduction of the cultural norm that ascribes

particular rights to those species deemed ‘native’ and those deemed ‘feral’ in relation to cultural contestations over individual, versus non-exclusive property rights. I suggest that the construction of vulnerable nature that is evident among exogenous identities assists in the relational construction of hunting as a deviant practice.

I conclude in chapter 8 by summarising the characteristics of endogenous and exogenous identities as they have been observed in this study. I present the endogenous identity as one that is competitive, localising and subject-centred and seeks to uphold the individual private property right. Moreover, an endogenous identity develops a knowledge of, and attachment to, environments and places through direct engagement. In contrast, an exogenous identity is protective and universalising. The exogenous identity gains knowledge from external networks that then influences attachments to specific environments and places. Finally, this identity seeks to instantiate a non-exclusive property right in relation to the environment. Hunters, and hunting practice, exist at an unfortunate confluence of a number of processes that produce management and are transforming this region. Hunters have had their practice delegitimized to the extent they are increasingly characterised as deviants in respect to the law. I argue that the divide between scientific and (non-scientific) hunting perspectives on the environment is a key factor driving this process.

This thesis adds to previous studies of invasive animal management by suggesting that feral pigs have been embroiled in broader disputes over belonging as it is tied to property right in the region. In addressing the question: ‘what factors influence the adoption of technological products and strategies?’ I have focused on the barriers to adoption that exist in this region. It is demonstrated that technologies become subject to resistance, directly through vandalism as well as through the proliferation of sceptical discourse, partially because of the contexts that inform their development and partially because of the way these technologies are enforced to demarcate and defend space. Moreover, I show how technologies influence the reproduction of endogenous and exogenous identities and thus how scientifically derived technologies are reinforcing exogenous relationships with nature to the detriment of those that are endogenous. I conclude that, because the socio-technological process of environmental management is active in reconfiguring identities, management practices should not focus on incorporating social ‘values’ into management. Instead, having demonstrated that management is active in the creation and preservation of environmental values, I argue that

should aim to build and sustain practices that preserve diverse socio-environmental relationships that reproduce such ‘values’ and identities.

2 History and Politics of the Wet Tropics World Heritage Area and the (former) Douglas Shire

2.1 Introduction

In this chapter I provide relevant background information on the history and geography of the region formerly known as the Douglas Shire, an administrative area that was merged with the Cairns City Council to form the northern half of the Cairns Region administered by the Cairns Regional Council in June 2008 (Map 2).

Many struggles over the environment that have taken place in this part of Australia have been well documented in both academic and non-academic literatures (Doyle 2000, Doyle & Kellow 1995, Hardy 2001, Hutton & Connors 1999, McDonald & Lane 2000, Nielsen 1997, Williams 2006). Here, I combine a review of this previous literature with my own ethnographic data including observations, interviews, policy documentation and media—both printed news media and online sources—to introduce the reader to key struggles over the environment that have shaped place and identity in this region. I show how scientific knowledge has become entangled with environmentalism and environmentalist identities (that I refer to as Green or Greenie identities) and how these, in turn, are enmeshed in the reproduction of oppositional identities characteristic of this region. Thirty years of contestation has subjected this region to a shifting set of tenure arrangements that have signalled an increasing non-local (southern and urban) ownership of the area. Within this context, feral pigs and the technologies used in their control exist as one set of sites for contestation. Common agreement that pigs are a pest makes this species a useful tool to engage in wider debates. Furthermore, the control technologies used in management, as they demarcate and defend particular locations, have become embroiled in wider disputations over the WTWHA. Underpinning each of the issues I describe are numerous processes of disputation that carry broader oppositions through time. By showing specifically how these oppositions move through a particular management issue—the management of feral pigs—I argue that environmental management interventions are constitutive of society and place.

Map 2 Wet Tropics of Far North Queensland showing boundaries of the Former Douglas Shire

The use of media sources in this chapter, and again in chapter seven, mainly draws upon *The Port Douglas and Mossman Gazette* (hereafter the Gazette) and *The Cairns Post*. My interest in these sources has been derived from the functional role they place insofar as they are appropriated, discussed, contested and at times held morally responsible for particular events and conflicts. The importance of regional newspapers in rural social life in Australia, and particularly as they are engaged in local environmental conflicts, has been noted elsewhere (Peace 1999). In the Douglas Shire region the Gazette has even played a role in the formal environmental politics of the region as the sole means of communication amongst members of the local council for a time.

2.1 The Place: The (Former) Douglas Shire

The Douglas Shire region splits roughly into two parts. In the south, approximately one hour's drive north of the city of Cairns (population 120,000), lie the region's two main towns: Mossman, the administrative centre, home to approximately 1900 residents and site of the Mossman Sugar Mill, and the tourist town of Port Douglas, home to around 3500 residents.[3] Sugarcane farms dominate the southern part of this region (Plate 1), with limited fruit growing operations that include banana farms, exotic fruit farms that grow a variety of tropical fruits and a pineapple farm. Other primary industries in the area include a barramundi fish farm and a commercial crocodile farm that also operates as an ecotourism wildlife park. Fluctuations in sugar prices have affected the profitability of sugarcane production and, in conjunction with rising property values in the area, there have been subtle recent changes in land use. The Cane estate, a rural residential subdivision created in 2006, exists on land previously used in sugarcane production and in 2009, I noted two former sugarcane paddocks had been planted with cocoa and received anecdotal evidence that the Mossman Sugar Mill was considering diversifying into cocoa and chocolate production. The Daintree National Park extends down the western part of the Shire with a public walking track attracting tourists to the Mossman Gorge ten minutes drive from Mossman.

[3] Unless otherwise stated, population estimates are rounded approximations accessed from the Australian Bureau of Statistics' 2006 census data (ABS 2006).

Plate 1 Sugarcane paddocks predominate in the southern part of Douglas Shire [2009]

As one drives northwards from Mossman to the Daintree River, sugarcane fields give way to properties grazed by white Brahman cattle. Past a number of small beachside settlements along the coast and a detour inland from the main road takes one to Daintree Village, where cattle properties and ecotourism ventures alternate. Rainforest, restricted to the hilly fringes of the sugarcane paddocks further south becomes denser, clothing the sides of the road. The Daintree River forms an important boundary within the Douglas Shire and it is this part of the Shire, north of the river, which has been the focus of historical and contemporary controversies.

Settlements north of the river can be accessed from the south on the Daintree Ferry, which operates from 6 am to midnight seven days per week. Once across the river there is a narrow two-way sealed road that snakes along the coast past the settlement of Cow Bay (pop. 300) to Cape Tribulation (pop. 100). This 35 kilometre stretch of road takes approximately one hour to cover by car. At Cape Tribulation the Bloomfield Track begins. The Bloomfield Track is a 30 kilometre unsealed, four-wheel drive only track that connects Cape Tribulation with the Aboriginal settlement of Wujal Wujal. The settlement of Wujal Wujal is more easily accessed

via the inland, and as of 2006 sealed, Cooktown Development and Cooktown Peninsula Roads that bypass the Daintree to connect Cairns with Cooktown.

In contrast to the southern part of the Shire, once across the river, one is immersed in a dense rainforest environment (Plate 2). Without mains electricity and restricted access across the river, development in this enclave of wet tropical rainforest has been strictly limited. Logging, cattle grazing and various horticultural activities have been attempted north of the river. Cattle grazing and many of the horticultural activities were uneconomical, while logging persisted through until the 1970s (Willis Burden 2008b, p.xiii). Currently primary industries in this part of the region are restricted to one organic banana farm (operated under contract by the international company Dole), a heliconia (flower) farm, one exotic fruit farm and a small number of cattle grazing properties concentrated along the north bank of the Daintree River—the only area that can access mains electricity. Eco-resorts, ecotourism operations and NGO-owned private reserves are prevalent in this area with these industries terminating a few kilometres north of the Bloomfield Track.

Plate 2 Cape Tribulation road viewed from ferry terminal [2009]

2.2 A Series of Controversies

2.2.1 The Daintree rainforest: A scientific re-evaluation

Rainforest persists along the rugged hills that traverse the Wet Tropics, while the flats are dominated by primary production and urban settlements. Aforementioned constraints on development north of the river had restricted clearing of tropical lowland rainforest north of the Daintree River prior to the 1970s. Initially, this rainforest had been classified as a recent coloniser of Australia related to rainforest in India and South-East Asia (Webb 1959). However, the Daintree was reassessed in the late 1970s as growing acceptance of the theory of continental drift and then plate tectonics instigated revisions of Australia's natural history. A new understanding of the Australian continent's bio-geographical relationships with other landmasses as part of the supercontinent Gondwana and discoveries of key floristic species in the area saw the Daintree rainforest re-appraised as a refugium for several ancient species. Len Webb, a scientist involved in the study and classification of rainforest species across Australia (Webb 1959, Webb & Tracey 1981), became an advocate for the preservation of the Daintree region as a result of his fieldwork experience, during which time he observed this habitat being destroyed (Sanderson 2008).

2.2.2 1978–1984: 'Opening up' Far North Queensland

In 1978, property developers bought land around the Cow Bay area from farmers unable to sustain profitable farming ventures (Willis Burden 2008a, pp.xiii-xiv). The acquired properties constituted a large proportion of the area's remnant lowland rainforest and the developers intent was to subdivide this land. The Douglas Shire Council (DSC) of the time refused approval for this subdivision, however, the developers were able to convince the Queensland Government to overrule the council's decision. Subdivision went ahead with approximately 1000 small blocks created and sold in the early 1980s. Subject to allegations of corruption by environmentalists and the media, this decision supported a wider government initiative aimed at 'opening up' Far North Queensland for development.[4]

[4] Allegations of corruption were not uncommon over the period 1968-1987 in which the conservative Johannes (Joh) Bjelke-Petersen served as Premier (Lunn 1984).

Plans to upgrade the Bloomfield Track in 1983 further accompanied this development aim and sparked protest action that achieved international recognition. A track connecting Cape Tribulation and the Bloomfield River had existed in some form since 1968 although it had not been continuously useable (Willis Burden 2008b). Attempts by the DSC, with Queensland Government support, to upgrade this track drew opposition from environmental activists who expressed concern about the impact of the road itself on the as yet unprotected Daintree rainforest and the adjoining Great Barrier Reef. More generally, these activists were concerned with any further development that such a road might enable, particularly with regards the newly subdivided but as yet undeveloped blocks of land in the area (*Four Corners* 1984, Williams 2006). In 1983 protestors aiming to prevent construction created what became known as 'the Blockade' (Plate 3) at the site of the proposed road. The Blockade attracted media interest and public support both nationally and internationally.

Plate 3 Media capture a group of protestors buried at the Daintree blockade site in 1983. A cameraman records events while a policeman stands vigilant (image reproduced with permission from James Cook University).

Many of these activists had moved to the region from Australia's southern states and notably held tertiary degrees in environmental and/or biological sciences. Prominent in this dispute was Dr Aila Keto, founder of the Rainforest Conservation Society, who highlighted the biological significance of the Daintree Rainforest as she sought to have the Daintree

Rainforest inscribed as part of the Wet Tropics World Heritage Area (Williams 2006). Around Australia protest rallies were organised with the aim of gaining protection for the Daintree and activists obtained endorsements for their actions from international celebrities such as Cliff Richard (*The Cairns Post* 1984).

In opposition to the activists, who were gathering considerable support for protection at a national and international level, state and local government representatives argued that the road was necessary for economic development, to ensure national security and to prevent drug production and trafficking. These government representatives sought to undermine the motives of those termed Greenies involved in the activism. Publicity leaflets issued by the DSC at the time described Greenies as 'emotional, political and [...] diversionary elements' who 'merely adopt an attitude of concern' (DSC n.d.). The educational background of activists became a key point of contention among those who were pro-development. The National Party's Martin Tenni, Minister for the Environment in the Queensland Government and local Member of Parliament, expressed particular disdain for the activists and for Dr Keto in particular.[5] Advocating the government's pro-development position, Tenni contrasted and denigrated 'academics' such as Keto and the other activists, with a wider public of 'sensible, thinking Australian people and tourists'. Tenni described:

> You can't have all academics, you've got to have the ordinary bloke that can wander the scrub, that knows the country, that can cut a stick o' [sugar] cane or dig a hole in the ground and ah, so, I don't listen to just academics. I listen to all sorts of people, and I've got all sorts of people in the electorate of Barron River (Martin Tenni, *Four Corners*, 1984).

Queensland Premier Joh Bjelke-Petersen, mixed sentiments of economic 'opening up' with an imagery of creating a democratic space. Improved access, he argued, would 'open up' the area for enjoyment by a wider public beyond those he termed hippies who had taken up residence in the disputed area (Bjelke-Petersen 1984).

Conservationists attempted to utilise knowledge of Aboriginal sacred sites along the path of the proposed road as a means by which to further their anti-road cause. Aboriginal people from Wujal Wujal, however, were publically supportive of the road going ahead. A desire for decreased travel time to the centre of Mossman, the opportunity the road afforded elders as a

[5] The National Party was, and is, a socially conservative and economically liberal political party focused in particular on rural issues.

means to exert power and proprietorship and pre-existing hostile relations with the hippies who had moved into the area prompted Aboriginal elders from Wujal Wujal to deny that the road threatened any burial or sacred sites, in spite of the existence of documented evidence to the contrary (Anderson 1989).

In spite of widespread media coverage and support for their cause, protesters' attempts to prevent road building were unsuccessful and in 1984, with police intervention resulting in the arrest of some protestors, bulldozers were able to begin construction of the Bloomfield Track. The opening of the track was portrayed in local news as a success with media capturing the transportation of senior citizens over the track in buses.

2.2.3 1988: World heritage listing

Concern over the destruction of the Daintree rainforest grew from its rarity, as one of the few substantial remnants of tropical lowland rainforest worldwide and due to high levels of endemism amongst its flora and fauna, including those denoted as 'primitive' (Nielsen 1997, RCS, Keto & Scott 1986). Specifically, the area contains rare endemic plants that represent the earliest examples of angiosperms, flowering plants, thought to have appeared on earth around 125 million years ago (RCS, Keto & Scott 1986, p. 45). In applying for UNESCO world heritage listing, the RCS argued that the area addressed the UNESCO criterion pertaining to an area's evolutionary significance. Keto and Scott stated the area represented 'a storehouse of knowledge relating to two important stages of the earth's evolutionary history' (RCS, Keto & Scott 1986, p. 53). This discursive linkage, between the area's evolutionary importance and its significance as an object of scientific study, was further emphasised by the reviewers of the nomination document. Emeritus Professor of Botany Rudolf Schuster, one of three international botanists who reviewed the proposal, commented that 'the desirability of according this unique area the maximal amount of protection' was justified 'since clearly, no complete and comprehensive study of the entire biota ha[d] been undertaken' (Schuster 1986, p. 159). Later in the review Schuster added, 'If protection is denied now, we may be in the same position in Queensland as we are now in the Neotropics: numerous taxa may become extinct before they are discovered, or will be represented only by a type specimen in a museum' (Schuster 1986, p. 161).

Activists were unsuccessful in achieving their short term aim, of preventing the upgrade of the Bloomfield Track, however the actions of environmentalists drew attention to this area, contributing to its subsequent nomination and inscription as an UNESCO World Heritage site in 1988 (Doyle 2000, Hutton & Connors 1999, Willis Burden 2008b). Nomination of this area for world heritage listing had been a campaign promise of the socially progressive Federal Labor Party and following Labor Party victory at federal level in 1987 the area was inscribed as part of the Wet Tropics World Heritage Area (WTWHA). Labor victory at state level in 1989 (bringing to an end nearly 20 years of conservative government) and finally a change in local government in 1991 ensured that the development agenda north of the river was halted. Inscription onto the World Heritage List was not widely supported by local residents nor the state and local governments of the time (Nielsen 1997).

2.2.4 1991–2008: Election of Mayor Berwick and subsequent 'undevelopment'

In 1991 Mike Berwick was elected mayor of the Douglas Shire. Berwick served as mayor until the DSC was amalgamated with the Cairns City Council to form the Cairns Regional Council in June 2008. Like many other hippies and Greenies seeking an environmentally friendly alternative lifestyle, Berwick had moved to the Douglas Shire during the late 1970s. Berwick had played a prominent role in the Blockade acting as a spokesperson for the Blockade protestors. As spokesperson, he expressed concerns that the development of subdivided properties, some as small as one hectare, would cause significant environmental damage in the area. Berwick's arguments were supported in reports to federal government at the time although this government was not prepared to override state government directives (Mike Berwick, *Four Corners,* 1984).

In spite of this opposition, many investors and would be residents, including environmentalists concerned with protection of the rainforest, bought land believing that infrastructure, including access to mains electricity, would be forthcoming. Berwick's election in 1991, however, put a halt to development with the institution of planning scheme restrictions that limited building and population growth as well as preventing the supply of mains electricity north of the river by local government (DSC 1994, Humphreys 2004).

Subsequently, federal and state governments have financially supported initiatives aimed at repurchasing subdivided freehold land for the conservation estate, an initiative that has become known as ‘the buyback’.

Buyback schemes, targeted at the acquisition of the properties sold during the 1970s have been financed at various times by both state and federal governments and through donations made to NGO organisations such as Rainforest Rescue and the Australian Rainforest Foundation (ARF 2008, RR 2007). Funding of approximately A$15 million dollars (Humphreys 1996) has been spent on property acquisition and to provide compensation for individuals who have chosen to retain their property even though they are prevented from developing it (Nelson-Carr 2006).

The property development restrictions and the buyback have been a source of division within the local community. Queensland Government ministers have sought to publicise that ‘the buyback scheme [does] not entail compulsory acquisition’ (Boyle 2006), however, those who oppose these measures continue to assert that this scheme has constituted a form of confiscation. The buyback scheme has enabled conservation NGOs to acquire property and in particular, the Australian Rainforest Foundation (ARF) and Rainforest Rescue (RR) have acquired significant holdings in the area (Plate 4). Properties that have been acquired through the buyback by Queensland Government are targeted for rezoning as part of the Daintree National Park, however this is not the case for land bought by the ARF and RR even where state funds have been used.

Plate 4 Rainforest Rescue fundraises by ‘selling’ land for $2 per square metre.
(Image sourced from Rainforest Rescue 2006). This Rainforest Rescue flyer
was obtained by author at a publicity stall, whilst supermarket shopping in Brisbane.

The ARF explicitly operates as a 'revolving land bank' (Cutler 2007), its aim being to buy, re-parcel, covenant as World Heritage Estate, and then resell land. In addition to this, the ARF is able to apply for compensation for lost development rights in the same way as private landholders. One informant, critical of the ARF, described their rationale as follows:

> Australian Rainforest Foundation is really supposedly reducing [ecological] footprint by buying blocks, joining adjacent blocks together, putting them under one title and selling them back. So basically instead of having two families you've got one family—that's the rationale of getting a much smaller footprint [anonymous informant, property owner and resident north of Daintree River, February 2008].

Scepticism towards this model of conservation has drawn criticisms from local residents as well as environmental commentators in other parts of Australia. In late 2007, the ARF threatened legal action against bloggers as a result of statements made against the ARF on the environmentally focused blogsite http://jennifermarohasy.com. Bloggers accused the ARF of 'attempting to manipulate and impede the Daintree rainforest buy back scheme' and the ARF's Chief Executive Officer as being 'more interested in commercial gain by the Australian Rainforest Foundation than the conservation of Australian Rainforest Habitat' (Paul 2007). The bloggers involved were forced to retract these and other statements made against the ARF.

Dispute over the merit of buyback has engaged different values of the forest north of the Daintree River. While those who have campaigned for its protection have done so on the basis of the scientific and evolutionary significance of the ancient plant and animal life it contains, those who oppose buyback have continued to emphasize that the subdivided land was subject to prior use as farmland (Willis Burden 2008a), farmed from 1890 through to the 1970s. One particular articulation and reply that took place through the letters to the editor highlights the disjointed quality of this debate, in which scientific understandings of nature are disputed by local understandings. One buyback critic wrote, describing:

> [a]ll land sold by Quaid was old farmland, farmed from the 1880's […] and cleared. […] In 1934 a severe cyclone struck the Cow Bay area and most of the farming stopped. The rainforest which has grown since is about the newest in the world, with no massive curtain figs, ancient cowrie pines or giant red cedars, as you will find on the Tablelands (Reichardt 2007).[6]

[6] This refers to a region within the Wet Tropics that lies to the southwest of the Daintree.

In direct response, and supportive of buyback, Knight described how the rainforest:

> is not measured in hundreds of years, like the curtain fig is. It is not measured in thousands of years, or tens of thousands. It is measured in millions of years. And more than 100 of them (Knight 2007).

The idea that 'ancient' rainforest is inherently valuable has not been a matter of debate. However, these individuals in conflict propose two distinct definitions of what constitutes 'ancient' rainforest, highlighting a sharp divide in the acceptance of scientific understandings of nature. Those concerned with the protection of the Daintree rainforest consider this area to be 'ancient' because it contains plant and animal species that appeared on earth 100 million years ago. However, detractors, who have opposed the buyback and development restrictions, argue that 'ancient' rainforest is that which contains long-lived specimens of a particular species (i.e. 'old-growth' forest). This dispute thus differs from others documented in the literature (Satterfield 2002, Peace 1996). Anthropological analysis of disputes over old-growth forests have tended to construct the environmentalist subject position as one which defends preservation of an area by de-emphasizing previous human activity, thus reinforcing an ideal of a non-human wilderness. In contrast, the forest worker subject position (as the opposing position has generally been) has been constructed as one that views the disputed forest as being subject to ongoing, and non-destructive, human usage. In the case presented here, shifting the emphasis from plants to property conservationists who have attempted to preserve the area from future (destructive) human interference, acknowledge past human interference.

Residents whose properties hug the north bank of the Daintree River, including the former Mayor, are able to access mains power. Most residents, including all those who live in the settlements of Cow Bay and Cape Tribulation, rely on individual generators for their power. Queensland Government policy has forbid the connection of residents to the State's electricity grid (Dept of Energy 2000) and physical protests by both pro and anti power activists have been a common occurrence (Hardy 2001, *The Cairns Post* 1996, *The Gazette* 1999). The rationale informing Queensland Government policy is that prohibiting mains power will assist in restricting development and thus assist in conserving the region. However, those who oppose the electricity ban argue that it not only places an unfair economic burden on ecotourism operators in the area but that it is an anti-environmental

practice because it forces landholders to use individual generators run off fossil fuels (Neil 2008).

2.2.5 2004–2009: The 'dysfunctional' Douglas Shire Council and council amalgamations

The 'undevelopment' agenda, by limiting property development, has impacted on the functioning of the DSC, particularly during its final term (2004–2008) prior to the amalgamation of the Douglas Shire and Cairns City Councils (forming the Cairns Regional Council) in June 2008. A number of investigations were carried out and the Queensland Government had, on multiple occasions, considered discharging the council of its responsibilities and appointing a statutory manager. In key votes relating to environmental issues there was a consistent split of 4–3 amongst councillors, the majority going against the mayor; at times, voting outcomes by local council conflicted with Queensland Government legislation that protected this area (*Investigation re Douglas Shire Council* 2006). Labelling this council 'dysfunctional', the appointed investigator nevertheless noted that the division in council was representative of a division in the constituency the council represented. In spite of ongoing infighting, the council was not dissolved until the Douglas Shire was amalgamated as part of a state-wide restructuring of local government.

While difficulties plagued the functioning of the DSC, amalgamation with Cairns in June 2008 was an unwelcome change. The DSC was not the only shire to be dissolved through amalgamation, however, the difficulties that had beset the functioning of council were a likely driver of amalgamation. Unlike many other small shires in Queensland that were merged, the Douglas Shire was financially solvent and able to effectively service its ratepayers at a lower cost than as a merged entity with Cairns (O'Brien 2008). Residents' unhappiness at this proposed change were articulated in non-binding referenda (AEC 2007) and through a discourse of unification in the local newspaper where assertions were made that they constituted a 'community' under threat—a 'community' distinct from that of Cairns city, whose identity was threatened by the prospect of becoming another suburb of Cairns.

Throughout 2008, both before and after amalgamation, the Gazette was flooded with letters of protest and remorse (see, for example, Clark 2008, Conley 2008). These writings

expressed pride in a community identity, forged in political conflict and through its local political institutions. Mayor Berwick set out a vibrant characterisation of the Douglas Shire:

> It is geographically isolated—with a strong community identity.[…] It was controversial, the first in Australia to apply sustainable limits to growth, it angered many people by removing development rights on freehold land on the Daintree Coast. (Mike Berwick 13 March 2008)

Shortly after amalgamation, former Councillor Rod Davis, not the only resident to refer to the Douglas Shire residents as 'family' in an unhappy marriage with Cairns, wrote: 'Our family is political jumping beans […] your mob is political has-beens, so anaesthetised your councillors can get elected without even one competitor bothering to show up' (Davis 2008).

One way the Queensland Government attempted to respond to the anger of disgruntled residents was through the creation of the 'iconic legislation': the *Iconic Queensland Places Act 2008* (Qld). In effect, this Act operates by transferring final authority for decision-making on planning regulations from local to state government, although ideally it is supposed to take place at local levels by an appointed representative board. Queensland Government press releases, however, described the Act's purposes in a variety of ways including 'protecting […] [the] region's natural beauty and way of life' (Lucas 2007) and to give 'the force of state law to planning schemes' (Lucas 2008). Support for this Act among the outgoing councillors followed a similar split to previous votes relating to the environment and development, 4–3, with those opposed to the legislation angered at the disempowerment of local authorities. The Douglas Shire Council passed a motion to reject the legislation although Mayor Berwick was involved in negotiations over the inscription of Douglas as an Iconic Place under this legislation (DSC 2007). Opposition to amalgamation and calls to de-amalgamate have persisted to date.

2.3 Introducing Pig Politics

It is largely within the context of the buyback that the 'problem' of feral animals in general, and pigs in particular, has been politicised. Private property owners and their supporters, angered at having their development rights restricted have regularly, in community meetings and through the news media, compared the impact of human development with that of feral pigs:

> People who still have their development rights are entitled to clear a miserly 400sq m of their freehold land.[…] Consider this. There is more damage by feral pigs and dingos to habitat and native animals (O'Doherty 2008).

Moreover, technologies of pig control have become embroiled in this wider politics of place. One case in particular concerns an ARF owned property that contains a popular swimming hole frequented by local residents. An unpopular presence in this area, the ARF's properties have been subject to local acts of resistance and the ARF's attempts to restrict the public from accessing their land have not always been successful. Having acquired the land on which this swimming hole is located, the ARF attempted to prohibit public access, first by locking the gates. In response, the padlocks were cut. The ARF installed cameras in order to identify who was cutting the padlocks. In response, an individual or group used a chainsaw to cut down the tree on which the cameras were mounted and stole the cameras. Following this, the ARF ceased attempting to actively enforce exclusion apart from the padlocked gate. Except, that is, for a pig trap that has been strategically positioned in the centre of the track that leads to this swimming hole. Those who continue to use this swimming hole regularly wedge rubbish and food between the mesh squares of this trap and, because human disturbance reduces trapping efficacy, this trap does not catch pigs—it remains in its position nonetheless.

The region's feral pigs are not, however, simply a local concern linked to local disputes over property. The feral pig 'problem' in Far North Queensland has received nationwide coverage. In the lead up to 2007 federal elections, Mark Vaile, leader of the National Party of Australia[7] made an election promise to spend A$15 million nationally on feral pest eradication (National Party of Australia 2007).[8] Although the election promise was to be for feral pest control nationally, the media statement was announced in, and focused on, the banana

[7] A political party formed around advocacy of rural issues, and a successor party of that led by Joh Bjelke-Petersen.
[8] Labor victory at this election meant that this funding was not forthcoming.

growing area of Tully (Map 1) an area about 3 hours' drive from Mossman in the southern part of the WTWHA. Specifically, the statement focused on feral pigs in the Wet Tropics and the damage they reportedly caused to agriculture and the environment. The announcement received nation-wide media coverage with articles appearing in both regional and nationally focused newspapers carrying the message of Far North Queensland's feral pigs as 'State Government pigs', ravaging adjacent agricultural land due to the purported neglect of the Labour Government of Queensland (*Australian Financial Review* 2007, Bateman 2007, *Gold Coast Bulletin* 2007, Grattan 2007, Hart 2007, Stafford 2007, *The Cairns Post* 2007). The common colloquialism that makes reference to feral pigs as 'Government pigs' or, more specifically, Premier of Queensland 'Anna Bligh's pigs', has solidified the pigs of the Wet Tropics as a salient political issue at local, state and federal levels.

2.4 The Reproduction of Oppositional Exogenous and Endogenous Identities

During the activism of the early 1980s a sharp divide was drawn between Greenies and Locals, with differences in education between these two groups articulated as a salient divisor. Through the most recent debates, particularly over electricity, a Locals versus (non-local) Greenies debate persists. The title of Local, as it is popularly described in the region, is one who has been born in Mossman (autochthonous as per the definition presented in chapter 1). Among Locals, the notion they have been disempowered by more recent migrants is persistent:

> they come up here they want to live in the bush they got to accept our rules too, not bring up all theirs and just push us aside. [Interview with Local by virtue of birth 2008]

Former Mayor Mike Berwick's property is located on the north side of the Daintree River, along the thin stretch of land able to access mains power. The location of the Greenie Mayor's residence, in conjunction with his anti-development stance, has led to accusations of hypocrisy. Such accusations come from a variety of local residents, not only Locals. Former councillor Bill Bellero, whose family moved to the region in the 1960s and who owned sugarcane property in the area, wrote of the Mayor: 'Move Out to Save Shire' in which he stated '[i]t's obvious those who have come and built and settled here in most recent times don't want to share with anyone else.' (Bellero 2007)

In the same way that non-Locals assist in reinforcing a Local identity that is contrasted with that of the Greenie outsider, there is heterogeneity among locally resident Greenies and their environmentalist compatriots from southern parts of Australia. Take Kevin for example. Kevin, a middle-aged male, holds a university degree in outdoor education and is from the state of Victoria. Not one of the Blockade protestors, Kevin moved to the Daintree region in 1988–1989 and along with his wife, has been an owner–operator of an ecotourism venture since 1994. Kevin owns a 65 hectare property that was included as part of the WTWHA.[9] Kevin's property was an exception in the area as it had not been part of the controversial subdivision. Parts of his property had remained unlogged and it contained some of the key 'primitive' species, including one that is restricted in range to just one valley within the Daintree Rainforest.

By providing access to fee paying tourists for self-guided and guided walks, Kevin and his wife attempt to run a profitable company in which the cost of environmental management of their property, including feral animal and weed control, is a business cost. World heritage listing of his property improves the product Kevin sells; however, it has also created disadvantages in regards to the provision of electricity. From Kevin's point of view, excision from the electricity grid exemplified a 'dishonesty in Australia's environmentalism', one in which non-local urban dwellers 'yearning for some expression of environmentalism' had supported government policy detrimental to his ability to successfully protect his property in an environmentally sound manner while remaining financially solvent [Interview 2009].

Kevin chose to express his political views on a website that also advertised his ecotourism business. His blog contained a mixture of his political views and photographs and descriptions of the flora and fauna found on his property. Kevin said that the blog was used for 'marketing purposes' and when I prompted as to whether he saw the politics we had been discussing as a part of his marketing he responded:

> [A colleague] thinks that it's really contradictory to the, the interests of the travel mindset that, that people are wanting to travel and avoid the unpleasantness of any kind of political intrigue or whatnot. But you know, I think that there are people that are really interested in how people behave differently.[…] So, the notion that we're the only community in Australia that isn't allowed to hook up to the grid for electricity is different for a lot of people and how we go about dealing with that and what the disadvantages are […] it is interesting to some people.[…] I guess that's

[9] Within the 800,000 hectare WTWHA, 98.1% is held by the State while 1.9% is privately held (WTMA 2006).

> why […] [it] gives them a bit more insight into the fact that we are different [Interview 2009].

Environmentally based disputes in this region were initially characterised in a way that matched Greenies against Locals. Each of these identities, however, exists within a set of networked relationships that have, in conjunction with the region's changing demography, assisted in their reproduction over time. The Greenie, environmentalist, position, though underpinned by a heterogeneous cluster of identities, has been increasingly successful as an exogenous identity that has leveraged national and international support through print and online media. Consequently, this environmentalist position has been able to secure external state and federal government legislative support that has overruled local government authority and Local desires. Local inhabitants, supported by incoming residents that reinforce this position endogenously, have been unsuccessful in their attempts to attract external popular and government support. Nevertheless, locally focused identities have maintained a level of power that has ensured a persistently even split at the local government level. While these oppositional identities have been reproduced overtime there is, as Kevin suggested, an overarching shared identity that exists among local residents—an identity of difference in respect to the environment.

2.5 Science, Property and the Shifting Geography of Ownership

Vassos Argyrou (2009) along with James Carrier and Paige West (2009) have argued that environmentalism in late modernity has reconfigured the spatiality of obligation such that 'conservation planners in New York have the right and even the obligation to make sure that New Guinea villagers do not hunt their prey to extinction' (Carrier & West 2009, p. 5). Changing property ownership, enabled by externally funded NGO organisations and increased government landholdings through commercial buyback, has fostered non-local ownership of the region; conservation in the region has become, in many respects, synonymous with property acquisition. Furthermore, in spite of recent oppositions to amalgamation, environmentalists have successfully created and used Queensland and Federal Government environmental protection legislation to override local council decisions.

The universal of science (Tsing 2005) has greatly assisted the environmentalist cause in securing non-local support which is why I will argue that the Greenie (or environmentalist)

position is an exogenous identity. Scientific knowledge and particularly the scientific significance of the region's flora has facilitated the geographies of remote ownership serving as a key element in the success of environmentalists. Sanderson (2008) has argued that 'at a time when rainforests in northern Australia were under threat, their representation as "ancient and indigenous", and so central to Australian identity and heritage, was a powerful and useful conflation of scientific and cultural thought' (p. 166). Such a conflation may have influenced public support for nomination within Australia, however this was not the case locally where listing was and continues to be highly contested on the grounds of non-scientific understandings of 'ancient' rainforest. Its universal significance as it was understood through a scientific understanding of nature enabled it to engage powerful international interests. What was critical to the area's successful nomination as a World Heritage Area was that it this was an international and scientifically mediated process that involved review by international scholars, all of whom had particular expertise in the field of botany. Rather than its ancient and indigenous status, scientific knowledge provided a value system in which these ancient and unique flora of evolutionary significance would have been significant had they not inhabited the Daintree in Australia and instead resided in another part of the world.

The nomination document exhibited circularity in the use of scientific knowledge in this process. Scientific knowledge was used both as justification and also was considered a beneficiary of the area's preservation. Scientific knowledge provided reasoned argument in support of the conservation of this area, however, the nomination document made evident that the area was deemed worthy of conservation expressly for the advancement of scientific knowledge.

2.6 Conclusion

The history of this region, as it has been reshaped by successful environmental activism, has been well documented. Some of these accounts have pointed to the ways that successful environmental activism has marginalised and divided some sectors of the community (Lane & McDonald 2000). However, such accounts have neglected the subtle processes by which identities in the region are being continuously reshaped through networked social relations and thus how oppositions persist between identity groups through contemporary environmental issues. I have introduced some of the characteristics of the endogenous and

exogenous identities I will describe through this thesis. In particular, I have highlighted the role of science in reinforcing an exogenous position, supporting a geography of non-local property ownership and shaping and using legislation that has developed through successful activism. In presenting this history I have outlined the broader oppositions that inform disputes over the management of feral pigs. However, it sets up a very practical problem that informs the current pig management impasse. Moral and fiscal responsibility for the management of feral pigs sits uncomfortably in respect to the expenditure on, and shifting geographies of, property ownership in the region.

3 ‘They’re Government Pigs’: Space, Movement and Matters of Fact

> Everyone blames the government, says they’re government pigs. But the government says ‘nah nah they’re your pigs’. They’re everybody’s pigs. [Interview with Tony, a (frustrated) ecologist employed by Queensland Government 2008]

3.1 Introduction

Tony’s quote is a statement that pertains to ongoing disputes over moral and fiscal responsibility for feral pigs in this region. It summarises a dispute that has persisted for at least ten years. The statement ‘they’re government pigs’ is well known among managers in the area and, as I described in chapter 2, transmitted through the news media. It is a phrase I have heard used repeatedly from disaffected members of the community throughout my study. In this chapter, I describe and interpret this phrase and the contestations surrounding its use as it is articulated over particular facts regarding pig movement. I introduce the oppositional identities that this debate reproduces as clusters of sociospatial relationships; in so doing I insert hunters into this management frame showing their precarious position within the landscape of management and the region more broadly. Introducing hunters into this discussion of management is consistent with a compositionalist approach (Latour 2006). Because hunters, as a group, are not property owners and because they are not adherents to scientific perspectives on the environment, theirs are a set of interests easily overlooked in the negotiation of management planning.

The data I present, as it is drawn from academic and management documents and interviews, describes how the ‘community’ and their ‘perceptions’ are known, in relation to scientific ‘facts’, by scientists and managers. I argue that this issue illustrates contrasting conceptions of space, place and movement that co-evolve with the reproduction of endogenous and exogenous identities.

3.2 Engagements with the 'Problem'

3.2.1 Scientific engagements with the problem

A conference proceedings, from a predominantly scientific workshop on feral pig management in the Wet Tropics held in 1999, begins by describing how feral pigs 'create tensions over the management of the WTWHA, which is often perceived to be a safe refuge and breeding ground for marauding (government) pigs' (Johnson & Stork 2001, p. 1). The results of home range studies (in which a number of individual pigs are collared with radio-tracking collars and monitored to see how far they move over a fixed period of time) are presented suggesting that the mean home ranges of feral pigs is 8.95 km^2 for males and 2.35 km^2 for females, with home ranges varying according to season (Mitchell 2001, pp. 45–46). The results of these studies are used as evidence to rebut the 'perceptions' of those who assert that the pigs of the Wet Tropics are 'government pigs':

> The absence of seasonal movements in the feral pig population is contrary to the general community perception. Most landholders within the region believe that feral pigs migrate down from the highlands to the coastal lowlands in the dry season. [...]. The results of this study do not support the existence of such a "seasonal migration"; rather, this seems to be a perception created by local movements by feral pigs inhabiting the transitional area, the rainforest-crop boundary. [...]. The formation of the [WT]WHA is perceived by many members of the public as primarily responsible for the economic losses incurred by the rural industries adjacent to the [WT]WHA and attributed to feral pigs. [...]. However the results of this study suggest that feral pigs adjacent to and in some cases living on landholders' properties are mainly responsible for this economic damage. (2001, pp. 46–47)

Scientific reasoning was used to negate the claims made by landholders, that pigs were moving from the WTWHA onto their properties, and were thus the responsibility of the government authorities. The last paragraph of these proceedings, in a paper titled 'Control of feral pigs in the Wet Tropics', concluded with the statement: '[t]here are many misconceptions about feral pigs and it is essential that the facts are presented to communities in order to allay their fears to gain greater community support for the course of action being undertaken' (Stork & Stanley 2001, p. 69). The course of action to be supported, from the point of view of these authors, was the practice of live-catch pig trapping.

John, an ecologist working in the area considered that those who expressed the view that the pigs were 'government pigs' did so as a political ploy in order to avoid accepting fiscal responsibility:

> Carla: [...] someone described that a possible barrier to improving feral pig management was that 'no-one owned the pigs' can you tell what you think about this?[10]
> John: that's really just defining the fact that people don't want to have to pay for it, so farmers have a problem, but they refuse to own the problem and to deal with it because they can scapegoat national parks' usually, and national parks don't really think they have a problem and, probably wouldn't manage pigs at all if it wasn't for farmers claiming there is a problem. So, that's just the strategy people are using to avoid forking out any money to deal with their own problems. [...] Parks and farmers need to work together to manage them, um, and I guess that comes to the equitable costs, I think it's not unreasonable to say that pigs are living in landscapes and they are using entire landscapes. They're not recognising boundaries. [Interview 2009]

John de-legitimized the viewpoints that opposed scientific positions on management on the grounds that they were driven by (economic) self-interest.

3.2.2 An engagement between a Greenie and a Local

In October 2007 I conducted two interviews in quick succession. This series of interviews neatly encapsulated the contestation described by Mitchell and other workshop participants identified eight years earlier between landholders and scientists, demonstrating the persistence of this debate between the key identity groups whose divisions define the Douglas Shire.

The first interview I conducted primarily with a man who I will refer to as Doug; a 35–40 year old pig hunter and landholder of a cattle property that bordered the WTWHA rainforest, along with his friend and work colleague Simon who was the son of local landholders and also a pig hunter. Doug had family ties that extended across Far North Queensland and stretched back a number of generations. Doug and Simon were Locals by virtue of birth. An avid pig hunter throughout his life, Doug described that he had become 'lazy' as he had gotten older and now hunted principally to keep pigs off his cattle property where they damaged pasture through their rooting activity. His views on the topics that we discussed during our interview—feral pig management, hunting and the WTWHA—were embedded

[10] This question was based on the content of a talk given at a workshop on feral pig management in 2008. Both John and I were in attendance at this workshop. I return to discuss further details of this workshop in chapter 6.

within a contrasting social world that pitted ‘us blokes’ (Locals, landholders, hunter), against ‘them’ (national parks rangers, ‘do-gooders’, ‘cassowary savers’, ‘Johnny-come-latelies’ and ‘Mexicans’).[11]

Because of this frequent reference to these social others whom he opposed I asked if he might know of anyone fitting these descriptions that I might speak to. It was this question that led me to my interview with Carl. Doug described Carl and his wife as a ‘bunch of radicals, nice people [...] lovely people, they’re lovely people’ before telephoning them on my behalf and arranging for me to meet with them on my drive back to Mossman township. Both Doug and Carl characterised themselves in staunch opposition to the other’s identity however their personal relationship was not hateful.

Doug

Doug’s knowledge of pig movement was closely linked to his experiential knowledge of Far North Queensland. His knowledge had been acquired from his own property as well as from his experiences of properties and places across the region that he explicitly connected with his family ties. His home was a two storey Queenslander that stood out in the middle of cattle pasture with rainforest on the fringing hills in the background outside his property boundary.[12] For Doug ‘the pigs just keep coming’ from the rainforest and onto his property. Doug described how national parks managers in particular ‘don’t do much about getting rid of the pigs and they come into our properties’. He justified this statement by pointing out that ‘only’ 20% of the Douglas Shire was ‘cleared freeholding with the remaining 80% held under world heritage title.[13]’ Doug’s sole method of pig control was pig hunting with the use of dogs and he was sceptical as to the efficacy of pig trapping. It had been his experience that pigs were unlikely to be attracted to traps baited with food because food was plentiful in the wet tropical environment.

[11] Slang term used to refer to citizens who are from or live ‘south of the border’; the states of Victoria and New South Wales.

[12] A Queenslander is a style of housing historically typical to Queensland. Queenslander’s are wooden houses where the dwelling is raised on stilts. Often the understorey is enclosed by wooden panels of vertical wooden slats that look much like a very tall picket fence. Some Queenslanders have wrap around verandas however Doug’s did not. The area underneath the dwelling is usually used for storage purposes or garaging (Fisher and Crozier 1992).

[13] ‘Freeholding’ refers to privately owned land.

Doug distinguished between different types of pigs whose physical features varied depending on the area they were from and he used this classification in making his inferences on the movement of pigs through the landscape:

> Doug: I think it's depending on what the other country outside does [...] if it's a dry year then pigs from right back out, y'know, back up Carbine out at Windsor, all that area then pigs must come in because I've seen them. [14] [...]. We have good big fat and long pigs, wild pigs, but then you get a whole flock of little mongrels coming in [...] long headed things [...] heads as heavy as the rest of their body sort of things. They must be outback, they must be bush pigs. [...]. They come from that forest country where it's doing hard times whereas here they grow a lot bigger a lot quicker because the food there, you see. [Interview 2007]

> Doug: Oh, I've seen them pigs come to home there, those little old razorback fellas. [...]. Normally we get pigs around Daintree, used to be a line of pigs that were just Daintree pigs and you could tell a Daintree pig. I could always tell a Daintree pig from a Cape Tribulation or, come back to King Glen, Cow Bay, I could just about tell you where that pig came from just from the type of pig it was. But I've seen pigs come into home and they don't belong here, you know, long haired, little short arses [...] big head, biggest part [is] their head, they're Carbine pigs. [Focus Group 2008]

Along with the people north of the river, Doug described the pigs north of the Daintree River with disparagement. He pointedly commented that it was 'the only place in the whole time I've been hunting I've ever caught a diseased pig [...] they're no good pig buggers over there' [Focus Group 2008].

Sceptical of trapping, Doug disagreed with those who were keeping hunters out of the World Heritage Area in order to protect the environment as they saw fit. It limited the amount of effort expended on pig control, because there was only one trapper employed in the region where there could be many hunters and it was irritating not to be legally allowed in to the fringes of the WTWHA that bordered his property when the pigs were 'coming out'. Those who actively sought to maintain the WTWHA without hunters—the do-gooders, 'cassowary savers' and so on—were, in his view, well meaning but they did not have the requisite knowledge to understand the situation; they did not have the wealth of local experience he had, and the national parks rangers' official training in particular left them 'half-educated'.

[14] Carbine and Windsor are on the Western side of the Great Dividing Range, a range that forms a boundary between the Wet and the Dry Tropics. These areas are approximately 40 kilometres away from Doug's farm in the Douglas Shire.

Carl

Carl, who I would estimate to have been in his early 50s, is originally from the state of Victoria and had 'travelled for a couple of years' after university before moving to north Queensland in the mid 1980s (he had not been involved in the protest action at that time). Although they had originally owned property north of the river, now subject to buyback, Carl and his wife lived on a property south of the river. The property had been farmland, however it had been only marginally productive, economically speaking. Carl and his wife were actively restoring this property which was regenerating wetland and they derived income through guided walks as part of an ecotourism venture. Aside from restored wetland, this property contained a small orchard growing a range of exotic tropical fruits. Unlike Doug, Carl's property comprised a single storey dwelling with ample veranda space surrounding it. The dwelling was surrounded by a relatively small patch of well-manicured lawn that quickly gave way to the lush rainforest and wetland that dominated the property. It was here, sitting at a large wooden bench style table on the veranda, that I interviewed Carl. His wife contributed to the discussion briefly and sporadically.

Carl described himself as having 'a passionate interest in flora' and he spent some of his leisure time within the WTWHA rainforest where he enjoyed botanising. His concerns about the impacts of pigs were focused on their impacts on particular flora, directly through foraging particular native species and disturbing the habitat through rooting, and indirectly that these aforementioned behaviours enabled the spread of invasive weeds. Carl was concerned about the impacts of pigs on other animals too, but with respect to species such as the iconic Cassowary (*Casuarius casuarius*) he was expressly more concerned about the impact of hunters and their dogs on cassowary than of pigs. Carl and his wife were anti-hunting.[15] The methods of feral pig control that Carl employed on his property were trapping and spotlight shooting, chosen because he supported their 'methodology' as means of control and because he found them to be successful.

Carl explicitly distinguished the concerns he raised from those who had 'a farming perspective'. He had been involved with a defunct Community Based Feral Pig Trapping Program (CBFPTP), a precursor to the trapping program that currently operated in the region,

[15] The cassowary (*Casuarius casuarius*) is a type of ratite—the group of large flightless birds that includes Ostrich (*Struthio camelus*), Emu (*Dromaius novaehollandiae*), Moa (*Dinomis spp*), Rhea (*Rhea spp*) and Kiwi (*Apteryx spp*)—and a frugivore, or fruit eater. The cassowary stands around 1.5-1.8 metres while fully grown.

and he had read the work of Dr Jim Mitchell—an ecologist, the contributor at the 1999 workshop cited in the previous section and instigator of the CBFPTP—and agreed with his views. In support of Dr Mitchell's assertions, Carl stated that he had 'also heard a lot of hysterical stuff that farmers often do to say that they're national parks pigs or world heritage pigs' and he pointed out, and agreed with, the scientific logic in which 'pigs don't move that much around the landscape. [...] They're here all the time, um, if I get rid of them all then there won't be any for a while until some filter back in from somewhere else. So that's how it works, the excess from somewhere else comes here.'

Carl found the methods of control he employed successful. So successful that he described being free of pigs for six months as a consequence of his sustained control while also having a positive influence on pig impacts in neighbouring areas. His property was free of pigs until 'some more dogging activity was happening on the other side of the creek 'cos one of the implications of using dogs is they chase 'em from one site to another. We got pigs back again when they started hunting with dogs on that property again' [Interview 2007].

3.3 Space, Movement and Matters of Fact

Doug and Carl reproduced the debate that formed the subject of the conference proceedings. Doug's explanation was referenced to his knowledge places—places he had traversed through his family relationships and experiences of the properties they owned. His inferences about the movement of pigs through this region were based upon his place–based typology of pigs. In contrast, Carl's description of movement rested in an understanding of the space of the Wet Tropics as a landscape in which, as Mitchell (2001) showed, pigs were relatively stationary features. Correspondingly, Doug's speech utilised a language of flux—the pigs just kept coming—while Carl's language was of stasis—pigs are here all the time.

These explanations, however, had an illusionary quality. In one respect Carl and Doug were saying something quite different and their disagreement with one another on this matter was made explicit to me. However, in my interview with him Doug also acknowledged that the pigs were 'everywhere' (including the local football field) and Carl acknowledged that while control might be effective in the short term, pigs would eventually repopulate his property from elsewhere. The ultimate division appeared to be one of emphasis rather than of kind,

highlighting that, where these individuals may have syncretised their knowledge, to assert a common understanding of this ecological process, they made a choice to disagree.

In order that I might understand why they had made this choice to index the forms of knowledge they had, I sought further interpretation of both Doug and Carl's remarks. I did this through the process of identifying and then contextualising key terms and phrases pertaining to space and movement as they related to value judgements on moral and fiscal responsibility. The process of alternately identifying key words/phrases and seeking to contextualise them often required that I trace new networks, thus contributing to the building of my data over time.

3.4 Scientific (and Management) Spatial Logics

Bioregion

There are two representations of space that scientists and adherents of scientific logics apply to this debate: that of the 'landscape' and a related concept of the 'bioregion'. The bioregion is the spatial scale that is used as the basis for much of the region's environmental governance. This spatial scale has been adopted by the Wet Tropics Management Authority (WTMA), the federally funded management agency responsible to both the Commonwealth Government and UNESCO for the protection of the WTWHA. WTMA advocates a view of management at a bioregional scale following international standards set out by the World Wildlife Fund (WWF) and those of the Commonwealth Government. The Commonwealth Government offers the definition of a bioregion as 'large, geographically distinct areas of land with common characteristics such as climate, ecological features and plant and animal communities' and provides a map of Australia divided into 85 bioregions (DEWHA 2010).[16]

WTMA has legislative capacity for the protection of the environment that supersedes local government and other Queensland Government environmental protection laws through the *Wet Tropics Management Plan 1998* (Qld) and the *Wet Tropics World Heritage Protection and Management Act 1993* (Qld). WTMA is responsible for infrastructure within the WTWHA as well as having the responsibilities of a landholder, particularly in terms of legal

[16] For a biological description of the Wet Tropics Bioregion see the Australian Natural Resources Atlas (DEWHA 2007).

requirements for weed and pest control; the organisation is further charged with protecting the Area's 'World Heritage values', specifically its species diversity including rare and threatened endemic plants of evolutionary significance, as well preserving the aesthetics of its coastlines and landscapes (WTMA 2004, p. 10).

WTMA does not directly engage in on ground management, instead it provides funding of approximately A$2.5 million annually (as of 2008) to the Queensland Parks and Wildlife Service (QPWS) and local councils to cover the management of the WTWHA. Claire an employee of WTMA, noted that pigs were just one of 500 weed species and 38 vertebrate pest species known to inhabit the WTWHA and weed and pest management constituted only one of many environmental management activities that are necessary in the region.

Responsible for overseeing the management of the entire WTWHA, visual representations of space—maps—are an important feature in WTMA documentation such as the Wet Tropics Conservation Strategy (2004).[17] Where Doug focused on the proportion of World Heritage Area to private landholding in the Douglas Shire (80% World Heritage Area 20% privately owned) the 2004 Conservation Strategy states that the Wet Tropics bioregion covers a mere 0.26% of the Australian continent. Visual depictions of the area are predominantly A4 size two-dimensional Euclidean projections of the Wet Tropics Bioregion, of the same form displayed in Map 1, that depict key features of importance for management: the boundary of the WTWHA within the Wet Tropics Bioregion; tenures, planning boundaries and local government boundaries; the distribution of particular invasive species; vegetation types; locations of wetland areas; and other relevant biogeographical information.

These visualisations are given alongside the discursive construction of the WTWHA as the centre of the wider Wet Tropics bioregion to project the vision of the conservation strategy, and of WTMA, to manage beyond the WTWHA boundaries:

> [T]he [Wet Tropics World Heritage] Area forms the central core of the Wet Tropics Bioregion, but it cannot be managed in isolation. For instance, many species of wildlife move freely across the boundaries and vital ecological processes such as seed dispersal and pollination also transcend boundaries (WTMA 2004, p. vi).

[17] For discussions of the study of maps, particularly in the representation of biodiversity see for example Carolan (2009) and Etherington (2003).

The ‘un-natural’ character of current WTWHA boundaries, influenced by political opposition during the inception of the area, remains an issue for management of this region:

> The areas included within the current [WT]WHA boundary [...] [were] influenced by prevailing political and community attitudes at the time when listing was being hotly contested. As a result there remain a range of management problems and anomalies. [...]. From both a conservation and management perspective, it is preferable to use biological and landscape information as the basis for delineation of natural boundaries (WTMA 2004, p. 35).

The language of wildlife and vital ecological processes transcending out from, and across, WTWHA boundaries is given as justification for the need to manage this area as a part of the (bioregional) whole. At the same time however this documentation reinforces that feral animals such as pigs, are stationary features uniformly distributed and ‘established [...] within and around the WHA’ (WTMA 2004, p. 66).

Landscape

The bioregion is a fixed area that defines WTMA’s sphere of concern for management and consequently the relationship between the WTWHA and the private property that surrounds it. However, discussion of feral pig management, within the context of feral animal management, revolves around the landscape scale; it was the landscape that was the spatial scale to which Carl, and ecologists that I spoke to, most often referred. Unlike the concept of bioregion, landscape denotes a flexible concept of scale that may be formed around a specific process of interest, although it usually refers to an area of more than one ecosystem. Both bioregional and landscape conceptions of the environment have been enabled through technological advances in computation that have been adopted into ecological science, including specifically advances in GIS technologies (Turner, Gardner & O'Neill 2001).

There remains some question among the ecologists I have engaged with through this research as to whether pigs have noticeable impacts at a landscape scale in this region (I return to this in chapter 6). Nevertheless this scale is useful for feral pig management planning from both an ecological standpoint, in terms of the legislative framework governing feral pig control, and because of economic issues that relate to control. In 1991, agricultural researchers Izac and O’Brien presented an overview of issues hindering effective management of feral pigs across Australia (Izac & P. O'Brien 1991) in which they stated that ‘feral pigs, as all wildlife, are a fugitive resource and are the object of non-exclusive, or common property rights’ (p.

14). What the authors mean by this is that feral pigs do not adhere to property boundaries. Because property boundaries define legal imperatives for their control this 'fugitive quality' creates a difficulty for the economic cost–benefit modelling of feral pig management; the cost of pig control and the economic benefit of control cannot be rationalised at the scale of the individual property. Consequently, it can be irrational, in a neoclassical economic sense, for a landholder to manage feral pigs on their property because they may incur the costs of control while their neighbour enjoys the economic benefits.

One approach to feral animal control, that attempts to deal with this problematic, is nil-tenure or 'tenure-blind' management. This is a popular approach among managers (Ford-Thompson 2010) and has been adopted around Australia. Its proponents argue that it minimises conflicts associated with tenure while ensuring that the ecological and economically optimal solutions are carried out. I was first introduced to the nil-tenure approach to management at a professional development workshop held in the Australian Capital Territory (ACT) in 2007 where we were told of a successful management endeavour, the management of wild dogs (*Canis lupus*) and foxes (*Vulpes vulpes*) in Brindabella and Wee Jasper Valleys on the border of New South Wales (NSW) and the Australian Capital Territory (ACT). Along with an endorsement of this method for feral pest management, we were provided with a report outlining the project. Adopting a landscape scale, this nil-tenure management process was described as a four-step process. First, the area to be managed is mapped without tenure boundaries to define the 'operational area'. Onto this operational area, the 'issue' is overlayed, that is the location and movement of feral animals within the operational area, and their sphere and severity of impact is represented. On the basis of this information, 'the solution' may be defined i.e. ecologically and economically optimal control solutions may be setup. Once the issue and solution have been defined, the fourth step, the reinstatement of tenure boundaries onto the operational area, is then used to assist in defining payment for 'optimal' control ('cost-sharing agreements' (Buller et al. 2005)).

In practice, the nil-tenure approach to management has been applied successfully to a variety of pest management problems around Australia (Buller et al. 2005, Ford-Thompson 2010, Hunt 2003). Particularly, this approach has been applied in other parts of Australia where state forest and national park land borders agricultural properties and where the operational

area is made to encompass agricultural tenures as well as a fringing portion of the state tenure.

3.4.1 Scientists' direct engagement in the WTWHA

In their direct perceptual engagement with the region ecologists maintain a strong presence in the small strip of lowland rainforest north of the Daintree River as well as other small remnants of rainforest further south, such as Mission Beach. Two separate scientific research stations operate north of the river and researchers from organisations based in Townsville and Cairns make regular trips to the area for research purposes. Access within the national parks boundaries is mediated by Queensland Parks and Wildlife Service (QPWS) and Aboriginal traditional owners who approve permits for researchers to carry out research in the protected areas.

Use of this small area is sufficiently high that these scientists have come into conflict with one another when experiments set up by one researcher have been disturbed by another using the same area. Experiments conducted in the area include permanent and semi-permanent exclosure plots—fenced areas designed to assess the impacts of feral pigs on ecosystem processes—and temporary trials set-up with motion sensing cameras and tracking boards (boards painted with tacky substances to record footprints of rodents who use the area). For both practical and health and safety reasons, Global Positioning Systems (GPS) are used to locate and record field sites; on occasion, plastic tracking tape may be used to guide researchers to their sites although the use of these cues is minimised. The activity of logging data in these areas through GPS make experimental field sites knowable through a commonly accepted system of georeferencing and thus to be known by individuals who may or may not be related to the original marker of space. Permit processes require researchers to limit markings and other modifications, such as track making, to preserve the environment and to discourage public access through these non-tracked areas.

Ben is one researcher who has worked in this area. Originally from one of Australia's southern states, Ben moved to the region temporarily in order to conduct research designed to improve feral pig control in the region. This research has been conducted predominantly in the lowland rainforest. After initial scoping that included both visits to the area and desktop

research, Ben developed a set of experiments according to a stratified experimental design whereby, results from a very small physical area, could be generalised to the scale of the whole tropical lowland rainforest ecosystem. While Ben's direct engagement with lowland rainforest is restricted, his findings are generalisable to the lowland ecosystem, and more broadly to the wet tropical bioregion that includes the modified properties the region contains. Predetermined by statistical and experimental design protocols and logistic factors, scientists' direct experience does not define the bounds of their concerns.

3.5 Property Based Spatial Logics

Mediated by permit processes, scientists have privileged access within the WTWHA. Through both their spatial practice and representations of space (Lefebvre 1991) ecologists and management agencies, and environmentalists who are supportive of these scientific logics, reproduce a rationale for their conceptions of the area at a bioregional and landscape scale. Spatial concepts are formed in an exogenous relationship to the places they are applied to and thus transform. In contrast, sugarcane farmers, owners of cattle properties and the hunters who hunt these properties, fix property at the centre of their place–based descriptions of the Wet Tropics. Within this region, landholders like Doug subscribe to a view in which 'public's public and private's private' [Focus Group 2008]. This endogenous description is simultaneously of space and place, a characterisation that positions a subject within their environment (Ingold 1993). In contrast the exogenous description situates the subject outside, or beyond, their immediate environment. The endogenous subject position may be illustrated in a simple way. These subjects drive around their property, inspect pig damage to crops and positions themselves within the space through the simplest gestures—finger pointing, or perhaps a casual glance—to the rainforested hills that clothe the paddocks that are taken to be the location of pigs (Plate 5). The latter identity may be illustrated as one that refers to home range studies and Euclidean maps.

The relationship between landholders of sugarcane and cattle properties in the area and pig hunters, like that of hunters with each other, is tense but close. Like Doug, many of these landholders hunt, or have hunted, themselves and even those landholders who express disdain for pig hunters in general often allow hunters ('the good ones') on their properties. With hunting illegal in the WTWHA hunters must maintain positive social relationships with

property owners in order to secure access to hunting areas and this is an increasingly difficult task. This dependence on, without possession of, property is a key factor to understanding the precarious positions of hunters within the Wet Tropics.

Plate 5 Sugarcane paddocks in foreground. (Recently cut paddock with re-sprouting sugarcane on the left, fully grown sugarcane ready for harvest on the right) with WTWHA rainforest and the Great Dividing Range in the immediate background [July 2009].

Scarcity of property to hunt and the problem of hunters' trespassing on properties are two closely linked issues for hunters. Alex, a hunter who was originally from New South Wales, had moved to the town of Mission Beach within the WTWHA in Far North Queensland following Cyclone Larry—a severe tropical cyclone that hit Far North Queensland in March 2006. Alex is a builder by trade, and the cyclone created job opportunities enabling him to move to the region. Alex hunted across Far North Queensland and described the difficulty he had faced securing access to properties due to the irresponsible behaviours of other hunters:

> Alex: it's really hard getting access [to properties for hunting]. […] I came up with the sort of cyclone stuff and I've just, everybody we see we just say 'do you know anyone that's got a property? do you know …' and […] we've had a lot of no's but we've got some yes's and now we're onto some. Hopefully that might open the doors up on a few more […]
> Carla: […] what sort of issues are there? Is it […] just that you're an unknown?
> Alex: no, there's a couple of issues. One is these people are making their living from their farm so you're going onto somebody's livelihood first of all. There's

> irresponsible guys with dogs.[…] They cut fences, they have dogs that pull down livestock, they, you know, they leave mess. They come in camp and leave beer cans and stuff all over the place um, so that's one issue, then you've got the rifle issue: guys just start shooting things. They want trophy scrub bulls which aren't scrub bulls at all they're […] [the grazier's] normal cattle and they shoot them. […] It's the same with everything, there's irresponsible people and there's responsible people, [the] minority ruins it for the majority. [Interview 2007]

Alex's account is an accurate assessment of the views of landholders and caretakers I have spoken with. On one occasion, while in the company of a hunter, the caretaker of the property on which we were hunting stated his frustration for hunters by suggesting that after I had 'got rid of the pigs' perhaps I could get rid of the hunters.[18] This utterance was followed, fluidly, by an acknowledgement of the hunter I was with as being acceptable—one of the 'gentleman' hunters.

The normality of this kind of dialogue, in which hunters are simultaneously maligned and afforded respect, is reinforced in the Douglas Shire through 'no hunting' signs erected by some landholders (Plate 6). Signage such as this publically conveys a clear sentiment that is unsupportive of hunting practice. However, not all signs are enforced—I have participated in hunts on properties displaying 'no hunting' signs and met the property owners whose properties bare these signs to discover that the owners both allow hunters access and, moreover, provide dog food in return for the assistance the hunters provide them in controlling pigs.

[18] The focus of my research, as I have openly described to my research participants, has been on pig management with a particular focus on pig hunting. For most, this has been interpreted as research aimed at 'getting rid of the pigs'.

Plate 6 Signs outside properties in the Douglas Shire reflect tensions between hunters and private property owners. Top: Sign north of Daintree River reads 'Hunting dogs Hunted' with a 'Land for Wildlife' sign visible in the bottom left of the photograph. Bottom: Sign at the entrance of a sugarcane property near the Mossman township. Some sugarcane properties display ‘No hunting’ signs while still allowing selected hunters’ access [2009].

As with Alex, many hunters who live and/or hunt in the Douglas region are not Locals by birth. Tom and Neil were two such hunters:

Tom

Tom, who I would estimate was approaching 50, has lived in Mossman and in other parts of Far North Queensland for about 45 years. His wife is a Local (by birth) and the group with whom he regularly hunts comprise his brother-in-law and his nephews (all Locals as well). Tom lived in Mossman township in a small single storey home with a lawn at the front and enclosed at the back. Within this enclosed area were his vehicle, pig dogs and a large cage of budgerigars. Tom was not unusual amongst hunters I met, in keeping such a large cage of these and other native and exotic parrots on his property (cf. Dunk 1994).[19] He had worked in a variety of jobs over his life including being a bus driver for tourists and he was currently running a commercial cleaning company with his wife. Over his hunting career Tom had hunted on cattle properties, including those in neighbouring Cape York, in the rainforest prior to world heritage listing—when he would walk along the logging trails that existed and where the freshly turned over soil that collected along the sides of these trails served as attractants to pigs—exotic fruit farms and banana farms. Principally, however, Tom hunted on the sugarcane properties and he was well known in the area as a sugarcane hunter.

During my discussions with Tom on the subject of pig management, he was careful to describe to me the geography of the Wet Tropics as he thought it related to pig management issues. Illustrated with photographs he had taken from a micro-lite aircraft, Tom's description focused on the southern part of the Shire. For Tom, this area was one of dense and impenetrable rainforest clad hills. The rainforest that covered these rugged hills extended out from the forested Great Dividing Range and snaked along ridge and creek lines to dovetail with the sugarcane covered flats. He showed examples of the few sugarcane paddocks in the area that are entirely enveloped by the tendrils of rainforest that extend from the WTWHA. In some of these places, where the sugarcane meets the rainforest, the WTWHA boundaries that he told me define a legal boundary across which hunters carrying firearms and their dogs cannot lawfully cross, come to within a few metres of the privately owned cane paddocks. In others, the WTWHA/private property boundary may be hundreds of metres back from the

[19] Additionally, some hunters kept, and in some cases bred, large numbers of native reptiles including snakes.

sugarcane with the rainforest cover on private property remaining intact because the terrain is inappropriate for cultivation.

Neil

Neil, in his mid 40s, was an avid pig hunter, hunting writer, and producer of pig hunting movies. His primary source of income, however, was derived from contract labouring work for the local council. Originally from the southern state of Victoria, Neil and his wife had moved to north Queensland because of his interest in pig hunting. Neil lived in a small, single storey white brick home in suburban Cairns and pig hunting photographs adorned its walls. His backyard comprised neatly mowed lawn with a row of dog kennels that housed his pig dogs, lining one of his property boundaries. Neil was the only hunter I met who had moved to the Wet Tropics solely because of the hunting. Neil's wife (Clara) who was also from Victoria did not hunt, however, she was strongly supportive of her husband. Clara was knowledgeable on the subject of pig hunting and pig hunting politics and accompanied him on camping trips to Cape York where he would hunt. Clara participated in interviews and focus groups. Although Neil and these other non-local hunters (and their spouses) lived in the Wet Tropics—in the centres of Mossman, Cairns, Tully and Mission Beach—and hunted throughout Far North Queensland, the main attraction was not the Wet Tropics but the neighbouring dry tropical environment of the Cape York Peninsula. The open savannah woodlands and extensive swamp areas of sparsely populated Cape York provide an appealing physical environment for hunting as well as an area that was politically attractive as it was not encumbered in what they described as Green politics.

Neil described the Wet Tropics in general as 'a green zone', a description of a political landscape dominated by 'Green' individuals concerned principally with the cassowary and opposed to pig hunting and particularly to pig hunting dogs. Neil and his wife made tongue-in-cheek comments about how the region's pigs in some way, knew about the WTWHA boundaries and the 'protection' that they afford:

> Neil: The pigs have really got a foothold [...] because of us [...] because we've created all the food for 'em—the Sugarcane, the Bananas, the Paw Paws, the Rambutans.
> Clara [Neil's Wife]: And they've got the Wet Tropics to run into and hide [...] because they're the areas that the pigs know that you can't come in, it's like an invisible line, it's like [from the pigs perspective] 'ha-ha' [Interview 2008]

Hunters such as Neil, his wife Clara, and Far North Queensland (but not Mossman) Local Mark shared a discourse, a corroborating description of pigs' movement indexed to property boundaries:

> Mark [Far North Queensland Local and Mossman resident]: […] they can put up a sign which says national parks and the pigs don't take any notice of it. [Interview 2007]

These discourses, although locally embedded, are shared across national networks. Clint Magro, a prominent pig hunting writer from New South Wales, who edits the nationally distributed magazine *Bacon Busters* describes:

> Have you ever thought of what it would be like being a *Sus scrofa,* which is the scientific name for a feral pig? Just think for a minute. Imagine relaxing through the day, camped under your favourite log or blackberry bush. […] Cruising the scrub at night, bulking up on farmers' crops planted just for you—how thoughtful of them. Of course, having to stay out of sight from the avid hunter and his mongrel dogs is crucial for survival. But hey, that is why National Parks were created. Just for you! (Magro 2006, p. 12)

3.5.1 Hunters' Direct Engagement

Hunters are highly territorial with regards the properties they hunt; they work to secure properties that are 'theirs', exerting proprietorship over the properties they hunt but do not own. Hunters take particular exception to other hunters who encroach upon their territory disturbing the patterns of movement they study:

> Tom: We get permission to hunt this property right and you don't want to be going out for three days in a row and working out the pattern of this bloody pig and then you organise for 5 or 6 blokes and the dogs and you go out and first thing you notice when you get out there is a set of bloody wheel tracks. [...]. Max's got a couple of properties he hunts, so, if say, well Max, the boys, myself, together we hunt Max's properties [...] then you go to Wayne's properties [...] [Focus Group 2008].

Hunters territorial behaviour pertains to safety, hunters do not want to be in an area where others with whom they have no communication may discharge firearms; it can cause tensions with the landholders when other hunters damage property, upset stock or behave in an unsafe manner. Landholders may impose blanket bans on all hunting and call authorities if any hunter is found to be trespassing.

The scarcity of property and hostility towards the WTWHA contribute to hunters' depictions of the rainforest environment as an undesirable hunting location. As Tom attested, hunting in

the rainforest prior to the inception of the World Heritage Area took place along the forestry trails that assisted hunters manoeuvre through an otherwise dense environment while also providing attractants to pigs. Having both seen and heard hunters in these areas myself, as well as receiving numerous reports on hunting activity from other residents, it is clear that hunters of many ages continue to hunt illegally in these areas (Plate 7). 'Rainforest hunting', however, i.e. hunting in areas other than the property fringes and the rainforested creeks—areas such as the national parks—is a pursuit commonly associated with 'youngfellas':

> Tom: I don't like hunting, I hunted the bloody rainforest when I was these fellas' age [mid 20's], and you get sick of it because you get bloody torn up with flaming wait-a-while.[20]
> Jim: You get too soft, that's your trouble.
> Tom: That's right, but yeah, there are still youngfellas and those that like to hunt rainforest [Focus Group 2008].
> Doug: Once you get to 35–40 you think 'I'm not walking up there, I can't drive I ain't going but them youngfellas think nothing of [it...]
> Simon: Or if it's raining, you're not going.
> Adam: They'll sleep in their car all night if they have to.
> Doug: Oh well, that's what we used to do, we used to sleep at the [Daintree] ferry and wait for the ferry to open. [...] Now someone says we're going to go there, the ferry [...] oh, I'll be there at some stage during the day [Focus Group 2008].

Aside from the discomfort and difficulty the rainforest poses hunters and the lack of vehicular access to rainforested areas, hunting the rainforest is a 'youngfellas' pursuit because of the difficulties associated with procuring access to private property in the area. Once property is secured, it is not readily given up, even as hunters age and hunt less:

> Doug: [The National Parks] should be opened up to a lot of younger people [...] I know a lot of fella's my age and maybe a little bit younger, soon as they see someone come onto their turf they're onto 'em say "whatya doing, this is my area, piss off" [Focus Group 2008].

Water is a central focus of hunting activity in the region and walking the creeks in the Douglas area often takes one through rainforested areas. Apart from this, hunters frequently hunt along the rainforest fringe—legally where it remains private property, and illegally where state owned forest borders private property—constantly monitoring ('researching the blocks') the paths that pigs take to and from the sugarcane paddocks or cattle properties (Plate 8).

[20] Wait-a-while (*Calamus australis)* is a climbing palm with a prickly stem and long tendrils with sharp barbs. Common in the dense Wet Tropics rainforest, it is all too easy to become ensnared as the long thin tendrils are not always easy to spot!

Plate 7 Pig hunter and dog walk through lowland rainforest north of the Daintree rainforest. Photograph captured by a motion sensing camera set-up to monitor ecological experiments [Photograph courtesy of Ben 2008].

Sugarcane hunting

With sugarcane predominating in the region, the practice of sugarcane hunting forms a key hunting activity. Hunting practice on the sugarcane properties takes place around the edges of the sugarcane paddocks along headlands and laneways that are only marginally wider than a four-wheel drive vehicle track and either separate two sugarcane paddocks or separate the sugarcane from rainforested creeks and hills. Hunting the sugarcane has developed into a specialised activity (I describe this in further detail in chapter 5) and is a group activity usually comprising 3–6 hunters. Groups are often formed around male family members—fathers, sons, brothers and uncles/brothers-in-law—where other members of the family hunt. Where a hunter is not from a hunting family, or where family does not live nearby, groups may be comprised of friends. Hunting groups tend to be resilient with groups of individuals hunting a property or properties together over a long period of time. Access rights to properties are held exclusively by one or two individuals who may then invite others to hunt with them on 'their' properties. Hunting an area as part of a group does not give all individuals within that group the right to hunt the property on their own, or with others of their choosing. Similar rules apply to the cattle properties in the region.

Plate 8 A 'pig pad', a track commonly taken by feral pigs to and from the rainforest (on the top side of the fence) into the sugarcane paddock (behind the author on the bottom side of the fence). The pig pad can be seen as the strip of shiny mud that runs through this photograph diagonally from top left to bottom right [2009].

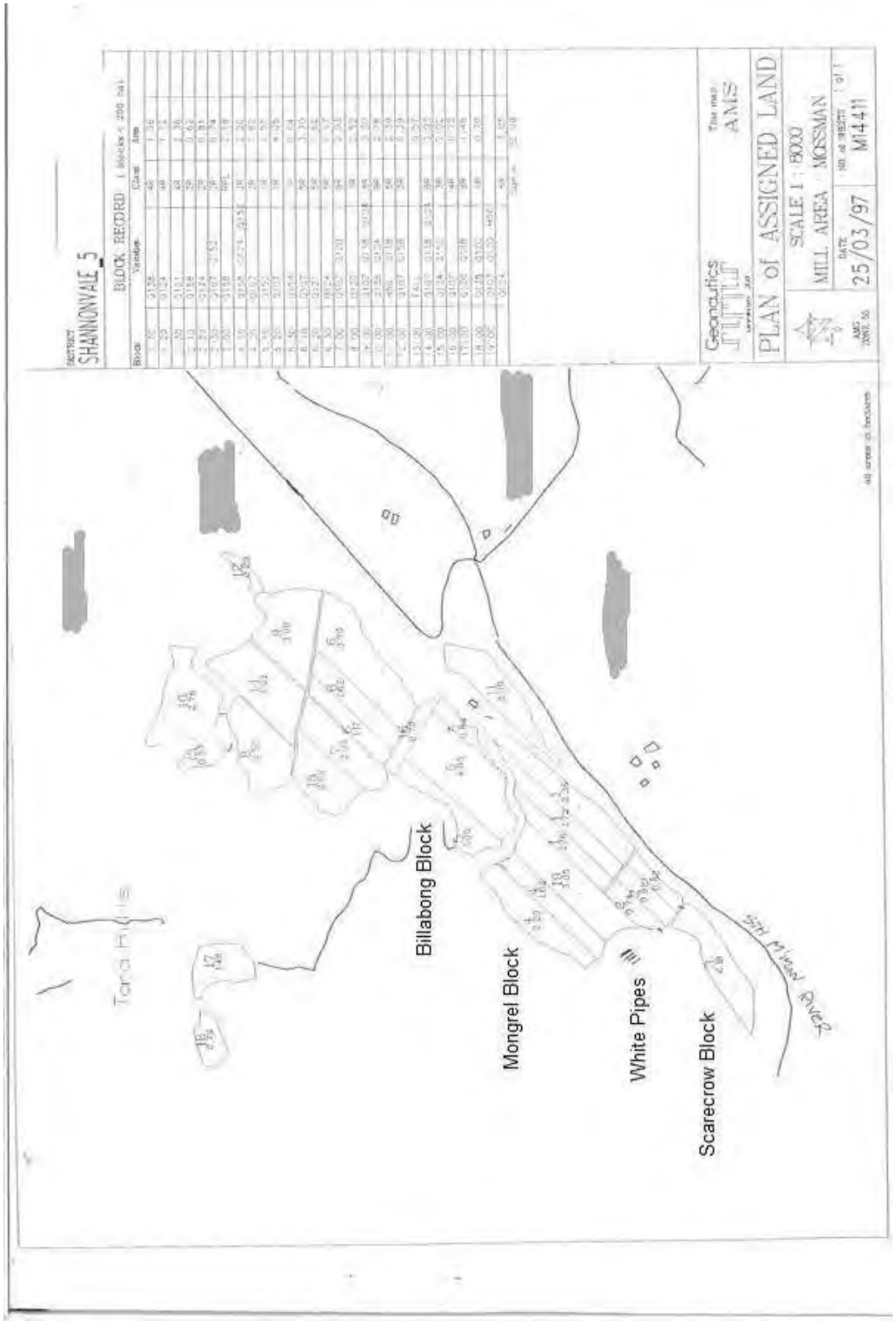
Michéle Dominy (2001) has shown how place language and acts of place naming serve to situate inhabitants within the landscape of their residence in such a way that they come to 'belong' in place. In particular, Dominy has shown how sheep farmers in the New Zealand high country engage in naming practices of properties in such a way that they embed themselves conceptually within the environment they inhabit; landholders within the Wet Tropics exhibit this similar practice of place naming. In exerting proprietorship over the properties they hunt in but not hold titles for, hunters adopt pre-existing place names into their practices. Notably, however, hunters also participate in their own naming activities. The place names that hunters ascribe to these properties, and thus the sense of places they create, are functional objects that provide a system that assists groups of hunters to navigate the properties they hunt, often at night, safely and effectively. Hunters' place naming practices arise within the social relationships of the hunting group, and in respect to the landholder of the property. While some places may be readily identifiable (if not identified) by an outsider to the group, others are known only through the social relationships that have constituted these names.

The practice of place naming by hunters is not limited to the sugarcane properties, however these properties provide the best examples of these practices. Map 3 provides one example of a sugarcane property that has been named by hunters. This map is of a sugarcane property as it is depicted by the Mossman Sugar Mill in a 'Mill Map'. Each paddock, or 'block', is given a number and is labelled according to its size, the variety of cane that is planted in each block and the number of 'return' years it has been harvested.[21] This information is recorded in the table to the right of the map. Hunters do not use or possess these maps themselves to navigate the paddocks, instead they learn through experience. As they move around the edges of these blocks during a hunt, hunters communicate their locations and movements via 2–way radios using this lexicon of place language that has been built over time.

I illustrate this point with reference to one property in particular that was hunted by Jack. Jack was a middle-aged Mossman Local by birth and a sugarcane farmer who had no need to hunt on his own farm. As he described, his sugarcane farm was in the middle of a number of other sugarcane properties, it did not border rainforest. Jack had problems with rodents and cockatoos but not pigs. Jack hunted a number of properties owned by other sugarcane farmers in the area and I spent some days with Jack discussing hunting, during which time he taught me how to fire a .22 rifle. Jack accessed and annotated the Mill Map shown in Map 3 at my request. This map shows three blocks: Billabong block, Mongrel block and Scarecrow block. The Billabong block took its name from its shape—it looked like a billabong—similarly the Big Block, (alternatively referred to as 'that Mongrel paddock') from its size (and shape). The Scarecrow Block had 'just' always had that name.[22] In addition to the use of these paddock names—names shared with landholder—salient features used by this hunting group were the 'white pipes', a physical location demarcated by the presence of some white pipes and, as I was to discover one evening, 'where we got that sow last time'.

[21] Sugarcane is a type of grass and re-sprouts once harvested slowly losing quality with each return so that after a period of time, usually 6–7 years, a paddock must be resewn.

[22] Looking at the Mill map one might imagine that its name is derived from the fact that it is a long and thin block that sticks out at the end of the property.



Map 3 'Mill map' of sugarcane property with hunters' key place names and locations labelled. Hunters do not use these maps themselves to navigate these spaces nor do they hold copies of these maps, this map was accessed and labelled at the author's request. The Mongrel block is alternatively referred to as the 'Big' Block. The blank space around the sugarcane paddocks consists of other properties (shaded out on the right) and rainforest (on the left) [2009].

On one evening in May 2009, I was in Jack's four-wheel drive vehicle at a property I had only visited once in daylight. I sat in the dark, immersed in the surrounding environment of dense sugarcane ready for harvest, and listened to a hunt unfold through a 2–way radio. I had been left in the vehicle on this occasion because the shape of these paddocks was such that Jack did not think it safe for me to accompany them. I listened in puzzlement as events unfolded, unable to make sense of what was happening. For about 2 hours, between 11 pm and 1 am on a Friday night/Saturday morning, I sat listening to dialogue such as the following:

> Hunter 1: They're not in that Mongrel Block…
> Hunter 2: Nah, they're in the Billabong paddock […]…
> Hunter 1: [I'm] where the sow was the other night […]…
> Jack: First plan, go up the top under the white pipes. Only go around there if I tell you […]…
> Hunter 1: [I'm] in [the] hollow…
> Hunter 2: [I'm at the] Big Block … [it's] difficult to hear, they [the pigs] did the exact same thing last year. [Notes recorded from 2-way radio conversation 2009]

While some names for blocks are shared names used by both hunters and property owners, other names for blocks may be known only to hunters. Aside from the naming of paddocks, other hunting properties contain places that have been made. For example, one property contains the places Blue Torch and Dead Horse (Plate 9). Blue Torch is a location demarcated by an old blue torch strung to a fence post. It was a place brought into being on an evening when the torch in question broke where one hunter regularly stood near a corner of the paddock. From this position the hunter could monitor two known exit points that pigs took from this block of sugarcane. This place was brought into existence through the act of demarcating it with an object and Blue Torch was incorporated as a part of the shared language used by the group of hunters who regularly hunt this block. Dead Horse was the site of a long since decomposed Brumby (feral horse). Unlike Blue Torch this location is not physically identifiable but it is remembered by the hunting party and remains as another important reference point some years after the horse disappeared.

Plate 9 Blue Torch [2009].

The unassuming names given to the places these hunters create does not diminish their importance. These places are functional objects that provide useful markers for navigation; they are also constituted and maintained through a set of social relationships. Because these locations are not always obvious to external parties and need to be learnt through interpersonal communication, and because they are functional, this private group language limits the extent to which hunting groups might change through time while remaining successful. These acts of place naming and the modes of navigation they enable reinforce particular means of perceiving and interacting with surroundings for a hunting individual. The hunter, like the landholder, engages in navigating through a space from within it, that is endogenously. Moreover, the space within which the hunter navigates is indexed to property.

3.6 Place–Based versus Space–Based Pigs

In their descriptions of pig movement, pigs are also characterised in ways that either embed the animal itself within a place–based typology, or conceive of them as independent objects that exist atop an abstract spatial plane. Doug's description characterised the feral pig by its physical appearance. Doug's discussion, in which he was able to identify a line of pigs through its domesticated history, simultaneously connected him with the places he described.

In a similar way, pigs with unusual characteristics caught while hunting—such as those that were, against type, white rather than black—were often attributed to a line of domesticated pigs that had been raised on that property in the historic past.[23] Contrastingly, the feral pigs of ecological home range studies are not characterised by their appearance (phenotype) or identified by their historical origin. Scientific feral pigs are randomly selected, collared with GPS or radio-tracking devices and monitored. Through mathematical and statistical analysis, polygons may be generated that depict the average home range and movement of a random pig in terms of its radius. Increasingly, scientific feral pigs, as with other feral animals, are genetic animals and may have their movements and population differences understood, and mapped, according to their traceable genetic differences, knowable by virtue of a suite of rapidly developing methods of genetic analysis (Berry, Tocher & Sarre 2004, DeYoung & Honeycutt 2005). Conceptualising pigs with respect to their genetic basis and their movement as indexed within an abstract plane divorces the species from a connection with the place within which it resides. Pigs are exogenous beings like those who describe them, added to rather than embedded within the landscape of their residence.

3.7 Endogenous and Exogenous Relationships to Place, Space and Property

Dominy (2001) argues that '[a]spects of language […] define and convey the conceptual systems that in turn shape and reflect the relationship of its residents to the land' (p. 137). In this chapter I have shown how both language and practice shape relationships with place differently according to identity grouping. Investigating the language of species movement shows how two clusters of oppositional identities strategically deploy a language of flux or stasis as it supports their own aspirations. For the scientific adherents, keen to remove property tenure from a discussion of feral animal control, feral pigs are shown to be fixed in an abstracted space. However, as is clear in policy documentation, property boundaries may be quickly redeployed to enable discussion of the movement of desirable natural processes (refer section 3.4). For scientists, abstract representations of space determine their experimental methods and subsequent direct engagement. Hunters, as with Doug, adopt a

[23] Domesticated pigs and 'razorback' feral pigs are both *Sus scrofa*—they vary according to their appearance, or phenotype, alone.

perspective derived from their direct experience where the subject looks horizontally outwards from within their property.

Although this cluster of identities, that comprise production landholders, local residents, Locals and Hunters, could adopt the abstracted viewpoint of their scientifically oriented counterparts they instead choose to proliferate a property based discourse that externalises responsibility for feral pigs to those who exclude them from national parks. Thus, the differences between those who view the Wet Tropics as an abstract space versus those who adopt property centred logics define these two clusters of identity. The cluster (Greenies, Managers and Ecologists) who view the area in abstract terms are related through a shared agreement in the value of scientific knowledge. This shared value acts as a linking factor for the related individuals and organisations. The latter, property centred group, shares discourse because they share practices that generate these views through direct engagement that simultaneously reinforce key social relationships.

Beyond a politicised choice of space that is engaged in talk of feral pigs, this language reflects the distinct desires of these two groups and the different manners of thinking, using and representing the Wet Tropics. It also offers clues for interpreting the different ways these groups relating to their physical environment that I will develop through this thesis. One of these clues is evidenced materially in the landscaping of these individuals' gardens. Carl's garden was visually continuous with the WTWHA, a microcosm of the surrounding rainforest environment, actively restored to expand rainforest habitat onto their properties. Those whose views reinforced a property based language lived on properties that were visually distinct from the adjacent WTWHA. The Local landholders and Hunters residences were all properties punctuated by tended gardens, dominated by lawns, pasture and aviaries and notably devoid of rainforest flora. Differences are further reflected in the conceptualisation of dis-embedded (exogenous) versus embedded (endogenous) feral pigs. Although Carl and Doug both agreed that pigs were a pest, their specific concerns varied, predicated in constructions of the feral pig that depicted two quite different kinds of animal.

Significant qualitative differences in spatial practices and representations must be attenuated against what could otherwise appear to be a high degree of similarity between the two groups with regards where pigs are and how they move. Those who adopt endogenous, placed–based

descriptions simultaneously uphold the norm of exclusive private property ownership. On the other hand, those who adopt an exogenous view understand this area as wet tropical rainforest bioregion and devalue the privilege associated with exclusive private property ownership, promoting a model of non-exclusive property right in its place. In refusing to syncretise knowledge and create shared 'facts' of pig movement the groups identified here engage a deeper dispute over cultural norms that govern property.

3.8 Conclusion

In this chapter, I have shown how two oppositional identities, exemplified by Doug and Carl, are shaped in relation to a wider network of similar identities, which I refer to as a cluster, in addition to their formation in differential relation to each other. Each identity cluster incorporates recent arrivals and non-local actors, reflecting the changing demography of the local area and the external interest shown in this region. Carl's Greenie position related to those who adopt scientific logics in this situation—including Managers and Ecologists—while Doug's Local position equally related to those of other landholders, local residents and Hunters.

At the basis of these two contrasting endogenous and exogenous identities I am introducing are different perceptions of the environment (Ingold 1993) and distinct relationships with place that manifest in the material reproduction of the environment that surrounds these oppositional actors. Beliefs in the value of scientific knowledge are a defining characteristic that distinguish these identities, however science itself is not the source of this dispute. The issue is not derived from sharply divided beliefs of natural process but rather the divided beliefs result from deep differences in beliefs about property right. Different matters of fact clash because they are attempts to reinforce beliefs in the value of the exclusive versus non-exclusive property right. This impasse ensures that disagreement as to who should be fiscally responsible for feral pig control in the region persists.

4 Pest or Resource? Pig Management Institutions and the Contested Economy of Control

4.1 Introduction

In this chapter I show how oppositional endogenous and exogenous identities have been reproduced through the changing institutions of management and in debates that persist regarding economic best practice management. Like the previous chapter, this chapter focuses on an issue that continues to arise in debates over feral animal management: whether or not control of species may coexist with, or be assisted through, commercialisation of the feral species itself or by the provision economic incentives for individuals to control the species. I first began thinking about this issue following an interview I conducted in late October 2007 with a hunter who I will call Geoff. In the telephone conversation that preceded the interview Geoff clearly set the direction of our discussion. Geoff, a chef by trade but who was working in the building industry, wanted to profit from hunting. It was no coincidence that this conversation took place only a few days after Mark Vaile's election pledge of A$15 million and the expenditure of state funds on management formed a part of our discussion (refer section 0). Geoff lived on Mossman's main road where a single row of residential housing sat between the road and extensive paddocks of sugarcane. Geoff was not receiving any payment for the hunting he carried out on the sugarcane farms locally or in the adjacent dry tropics. He hunted 'for the simple pleasure of it […] and helping out cane farmers'. Geoff considered that hunting could be a part of management and that it should be made profitable through the provision of chiller boxes.[24] If it were made profitable, he argued, hunters could provide a management service. He was aggrieved that hunters 'down south' were able to profit where he was not. This was another argument where different viewpoints persisted without resolution, and where this lack of resolution over a specific issue fed more general oppositions between groups, so that Geoff, like Doug before him, was sceptical of the 'blokes' in charge of control and their knowledge; a grievance that was firmly embedded in a division of 'north' and 'south' [Interview 2007].

The views that Geoff was expressing were not new to me. I was at that stage well versed in the basics of ecologically based management theory and I was aware of the many arguments

[24] A chiller box is a refrigerated container that serves as a repository for game meat.

for and against, incorporating commercial harvest and bounty payments into management. More to the point, I knew that the ecologists and managers involved in management in the Wet Tropics were, at best, sceptical about the usefulness of these approaches in pursuing 'effective' control. This debate has persisted for at least 30 years when legislative changes allowed for the commercialisation of game meats such as feral pigs and at least 100 years where the 'bounty' system is concerned (Choquenot, McIlroy & Korn 1996).

My discussions with Geoff may be compared with my experiences of the workshop I attended in 2006 on social drivers of invasive species management held in Adelaide, South Australia. At this workshop we sat in the conference room of a comfortable hotel and learnt how to conduct an economic benchmarking exercise, quantifying the costs of a pest on the basis of which costs and benefits of pest control could be calculated. Indeed, this event that took place early in my candidature helped explain why my quantitative skills were deemed valuable. Part of what appeared desirable to those in the room was for me to exact research in which I would calculate social and economic costs (and perhaps ecological costs as well) of feral pigs in the wet tropics in a way that could be offset against the costs of control in order to simultaneously present a rationale for, and define, an optimal management strategy.

These two events represented two different processes of economic rationalisation. Geoff's desires mixed his own desires to be a financial beneficiary of feral pig control, his enjoyment of hunting, and an underlying belief that ascribing a resource value to feral pigs would motivate individuals to kill pigs. The view underscoring the economic benchmarking exercise was that, through a series of calculations, a strategy could be devised that minimised the costs of control while maximising the benefit. On the basis of this, it was assumed, a financial benefactor of feral pig control would be motivated to control pigs in the prescribed manner.

James Carrier argues that from the 1950s onwards, the relationship between an individual's economic behaviour within the broader political economy was radically re-conceptualised. Whereas previously, an economic agent had been understood as existing within the context of its broader social and political institutions, a shift in economic theory, accompanied by increased emphasis on mathematical formalism in the discipline of economics, depicted an actor's social and political life within a context of economic action:

> '[W]hereas institutional economics had seen the economy as a creature of its institutional framework, for new institutional economics the direction of influence

> was reversed: the institutional framework is seen as a creature of the economy, populated by autonomous, rational calculators (see Chapman and Buckley 1997; Hodgson 1988: 154-156)'. (Carrier 1998, pp. 6-7)

The socioeconomic benchmarking exercise I took part in at this workshop was an exercise that sought to prescribe activity on the basis of quantified economic justification. In other words, it was an exercise that exhibited an instance of virtualism which, as Carrier describes, '[takes a] virtual reality to be not just a parsimonious description of what is really happening, but prescriptive of what the world ought to be; when, that is, they seek to make the world conform to their virtual vision' (Carrier 1998, p. 2).

Where Carrier's account describes the ascendency of a particular economically driven theory of human behaviour, Stephen Gudeman (2001) has attempted to re-theorise human economic behaviour so as to overcome, what he considers to be, the dualism between neo-classical economic and sociocultural accounts of economic behaviour. Gudeman (2001) depicts the economy as comprised of two spheres: the 'community' and the 'market'. This model proposes that humans drive the economy through their dual desires for 'social fulfilment, curiosity, and the pleasure for mastery, as well as instrumental purpose, competition and the accumulation of gains' (p. 1). Gudeman's theory of the economy suggests that formal logics that rationalise costs and benefits will, at times, be adopted by actors who actively choose to behave as neo-classical rational agents. Gudeman points out that within the shifting and sometimes conflicting realms of the community and market two different kinds of relationships persist:

> The market realm revolves about short-term material relationships that are undertaken *for the sake of* achieving a project or securing a good. In the communal realm, material goods are exchanged through relationships kept *for their own sake.* (Gudeman 2001, p. 10)

Considering the importance of economic relationships within pig management, as they may be reconfigured through the application of formal economic approaches, provides an interesting case study from which to understand management practice more generally. This is because 'management' itself may also be usefully understood as having dual faces. Management is an institution that is created by humans that exists for an instrumental purpose, in this case to control pigs, but it is equally a 'gathering' (Latour 2004a) of social, socio-environmental and sociospatial relationships between humans and non-humans

(including technologies) that simultaneously reproduces identities, society and space. In this chapter I show how reconfiguring the economy of control, as it has occurred alongside the changes in dominant technologies of control, impacts upon broader social and socio-environmental relations, and therefore identity, in the region. I end this chapter with a point directed towards environmental managers. I suggest that, in addition to cost–benefit calculations, management planning may be usefully improved if it is accompanied by an analysis of beneficiary–benefactor relationships associated with economically optimal solutions.

4.2 A History of Pig Control in the Douglas Shire

4.2.1 Bounties (1908-1990)

The 'bounty' system is the most enduring form of management that has persisted in this area. From 1908 through until approximately 1990 (but with some interruption), bounty payments for pig scalps were paid by organisations associated with the sugarcane industry including the mills and authorities such as the Cane Pest and Productivity Boards (CPPB's). From 1908 to 1911 the Mossman Mill set payment at a rate of five shillings per scalp, a rate at which payment for two scalps exceeded the average daily wage for the time (Kerr 1979, p. 89). Since its inception, the bounty system has been subject to abuse by hunters who collected payment for scalps acquired outside the cane growing areas, namely Cape York. Payment of bounties ceased in 1911 as a consequence of this fraudulent activity, however they were reinstated in 1929. In 1979, bounties were paid at the rate of A$5 per scalp (Kerr 1979, p. 90).

Bounty payments were discontinued altogether around 1990 in Mossman at which time payment was set at A$10 per scalp. A former Mossman CPPB employee cited three reasons for the cessation of bounty payments: The first was the belief that hunters were, as before, defrauding the system by collecting scalps harvested outside the cane growing area; second, scientific research suggested that bounties were an ineffective means of controlling 'pest populations and/or damage'; and finally, with limited funding pig control was deemed a lower priority with respect to other issues.

4.2.2 Pig Trapping I: The Community Based Feral Pig Trapping Program (1993–2002)

> When I first come up here [from South East Queensland] there was no sort of pig management plan at all, there was just individual landholders who had problems with pigs who were whinging to the government all the time and the only pig management was dogging and hunting and that's all they knew. [Interview Tony, 2008]

From 1993 (5 years after the inception of the WTWHA) through until 2002, a Community Based Feral Pig Trapping Program (CBFPTP) operated in the Wet Tropics of north Queensland. This program was formed by the Department of Primary Industries (DPI) as a response to community disgruntlement over pig management that was linked with the inception of the WTWHA. Formally, the program was instituted with the goal to 'raise the awareness in the general community of pig management methods, and to demonstrate a model of pig management to the region as a whole' (Mitchell 1994, p. 14). The program's goal was modified in 1996 to include fostering 'community ownership' and, in 2001, modified further to stipulate its aim as 'to build the capacity of all stakeholders and community to manage the feral pig population' (James & Hillier 2001, p. 1). This transformation in bureaucratic language reflected the desires of the state government agencies, who provided funding for the program but who did not consider that it was their responsibility to fund pig control in perpetuity, to divest obligation onto the local community [Interview 2008].

From a basis, in 1993, of 42 pig traps stationed in 8 areas of the Wet Tropics (Anon 1993), and funding of A$11,000 (Mitchell 1996), the program expanded over its life. At its peak, in the 2000/01 year, the program consisted of 826 traps, covered 19 management groups, and extended across the entire Wet Tropics region. The CBFPTP included some privately operated traps, and in 2000/01 had an operating budget of A$130,100 (Hillier 2002, James & Hiller 2001). In addition to this formal expenditure, the combined in kind contributions of government management agencies, management groups (including the CPPB's and community environment groups) and the pig trappers and landholders involved, was estimated to be A$124,000 in 1993/4 rising to A$954,000 in 2001/2 (Hillier 2002). On average, over the life of this project, it was estimated that each A$1 spent by funding agencies was matched by A$4 of in kind support from the 'community'. A substantial proportion of this support was provided by individual 'recreational' trappers (Hillier 2002, p.

3). On average, the cost of trapping was estimated, including labour costs, at A$220 per pig (Hillier 2002, p. 9).

The CBFPTP was the first large scale coordinated feral pig program in the Wet Tropics and it served to introduce pig trapping as a means of control into the area. Whereas bounties had been subsidised by the sugarcane industry and paid to individual hunters by area representatives, the CBFPTP program combined contributions from government management agencies (WTMA, the Department of Natural Resources and Mines, and QPWS) and restructured management into a centralised program administered through a series of 'trapping systems'. Each trapping system was operated by one trapper contracted at a nominal rate (usually $200 per month (Mitchell 1996)) and who ideally, though there were some problems in practice, had access to both freehold and state-owned properties.

Initially, management coordinators and trappers had hoped that trappers might be able to profit from the sale of pig carcasses, and chiller boxes operated in many areas during the early years of the program. However, commercial boxes did not remain open for long (Mitchell & Dorrington 1997), rendered nonviable because of transport costs and 'concerns about the high fat content of carcasses from the Wet Tropics' (Mitchell & Dorrington 1998, p. 5). While trappers explicitly trapped for enjoyment and were thus willing to incur personal costs (Mitchell 1996, p. 3), increasing expenses, including the need for public liability insurance which cost up to $250 per month per trapper, made sustaining a stable group of volunteers difficult (Hillier 2002, p. 9). A report evaluating this program, published in 2002, based on surveys sent to local residents and focus groups with government managers, highlighted the contradictory financial and legal position of the trappers who sustained this program. The report cited government managers who expressed that '[m]ost landholders complain about "Government Pigs" but do nothing to help themselves' (Hillier 2002, p. 69), while government policy restricted the use of volunteers conducting 'government business' and thus effectively disabled the use of volunteer pig trappers (Hillier 2002, p. 9). The report further highlighted that strong moral support for this program amongst landholders did not extend to a willingness to support the program financially (Hillier 2002, p. 84). A combination of being unable to secure further funding from government sources (who understood that having 'built capacity' they could discharge their fiscal responsibilities) or the community, disabled from utilising 'volunteer' trappers on government land, increasing

costs to trappers of public liability insurance and the inability to sell pig carcasses for a profit, the CBFPTP became defunct at the end of 2002.

4.2.3 Pig Trapping II: Private operators (2005–present)

> They're a fairly divided community over there on a lot of issues, pigs seems to be the one thing that most people in Daintree can agree on, that they are a problem. I think the community's fairly satisfied that something's happening over there, I've had many letters of praise about the program […] the community seems to be very supportive to date. [Interview manager and instigator of current council trapping program 2008]

The feral pig trapping program in the Douglas Shire is administered by the local council in conjunction with QPWS. During the operation of the CBFPTP the DSC was unique in being the only council to financially support a pig trapping program (the Daintree coast program constituting one of the 19 trapping systems). However, with the termination of the CBFPTP, pig trapping operations in the Shire were reduced to a trap lending scheme in which the council lent out traps for ratepayers to operate themselves. A trapping program was reinstated in 2005 following the initiative of an individual council employee who secured A$45,000 from a Commonwealth Government funding source. The trapping program was resurrected north of the Daintree River, between the Daintree Ferry and Cape Tribulation. The Daintree feral pig trapping program is run by one full-time trapping contractor, who in early 2009 secured further funding (value unknown) from another Commonwealth Government source, enabling him to extend the trapping program north of Cape Tribulation along the Bloomfield Track.

South of the Daintree River, both QPWS and the DSC carry out limited control. QPWS conducts occasional trapping around the Mossman Gorge area and contributes funding to the Daintree program of approximately A$30,000 per year (this funding obtained through QPWS' own internal competitive funding processes) plus in kind support. The pig trapper receives a fixed amount, set during a competitive tendering process as well as a small bonus for each pig tail he returns (rather than a scalp as with the bounties). The council maintains some traps to lend to private landholders and council staff assists in the disposal of pigs where necessary to service residents south of the river. In the 2008/2009 financial year the trapping program netted 535 pigs.

4.2.4 Baiting

Many managers and ecologists alike are supportive of baiting technologies as the only viable long-term solution to broad-scale control:

> Gary [Manager]: I don't have a problem with baiting […] I don't have a concern about that 'cos I think you gotta manage for the greater good […] and it's far more effective to get a big number of pigs [through baiting] than try to trap them. [Interview 2009]

> Ben [Ecologist]: I'd love to come up with some way of really reducing population levels and seriously reducing the impacts, using baiting or something, I think that's justifiable, although I'm not entirely comfortable with it […]
> Carla: You say you're not entirely comfortable with baiting, can you expand on that?
> Ben: […] just on the level of the individual pig I s'pose, just out of empathy for the individual pigs that get poisoned […] it's not an altogether pleasant experience. But if there's some greater benefit that comes out of it, then I think it's probably worthwhile, but, certainly it wouldn't be worthwhile, if we didn't have a decent impact on mitigating the impacts of pigs in the forest. I think, I wouldn't support baiting in the forest at all, in that case, if all it did was kill pigs without sort of ameliorating their impacts. [Interview 2009]

At present some baiting does occur in the wet tropical areas of north Queensland. In the Douglas Shire area baiting takes place around some of the sugarcane farms south of the river, paid for and carried out by the council. The bait used is 1080 poison (compound sodium monofluoroacetate) and its use is legally restricted, requiring permission from the Department of Primary of Industries (DPI) before it may be administered by an individual with appropriate registration. Its use is further restricted on World Heritage Area estate due to concerns over non-target impacts (WTMA 2006). The compound 1080 is, in general, an unpopular option with growing local, national and international criticism of its ongoing registration as a pesticide (a matter I take up in the following chapter). In August 2009, the patenting of a new toxin effective in the control of feral pigs was announced (MLA 2009). It is claimed that this compound, sodium nitrite, will provide a more humane and target specific poison for the control of pigs compared with 1080; however it has yet to be registered for use.

4.3 Impacts of Changing Institutions of Management on the Region's Relationships

The utility of poisoning as a means of control stems from the fact that the technology exacts the killing rather than a person. Consequently, unlike other forms of control, such as trapping and hunting, baiting provides a method of killing that reduces local labour requirements and costs, redistributing them to research facilities, funding organisations and pest control and management businesses where substantial research and development costs may be offset by the international marketing of the technology.[25] In addition, baiting technologies overcome the logistic issues associated with inaccessibility to humans posed by the region's dense and mountainous rainforest environment. As a commercial product, with the costs of research and development concentrated into the technology and the deployment of technologies requiring professionalism for its distribution, individual participation in management is transformed into cash transaction, with less room for volunteers.

This reconfiguration of labour relations not only changes beneficiary–benefactor relationships it also affects human–environment relationships. Notably, shifting beneficiary–benefactor relationships within pig management have exhibited a similar pattern to those that govern property ownership in the region (refer chapter 2). The initial incarnation of a trapping program fostered a transition from sugar industry funded pig management, of pigs as a sugarcane pest, to one that was supported by government bodies responsible for both agricultural and environmental issues. Alongside this transition of fiscal ownership was a shift in the dominant technology, from individual hunting practice to the ecological best practice of pig trapping. As long as there was sufficient economic support from state bodies, community support could be leveraged and trapping proceeded. As a state–community hybrid, the trapping program mitigated local tensions related to the WTWHA by providing external financial support for its management and trappers could be found because they enjoyed it. Non-local capital, although some suggest an insufficient amount, flowed into the region. The community in general, however, was unwilling to adopt this management strategy as its own and those that were, were prevented from such action as 'volunteer' work was difficult to reconcile with the state bureaucracy.

[25] Feral pigs are considered pest species in numerous locations around the world including: New Zealand (Cowan, P & Tyndale-Biscoes 1997), Hawaii (Noguiera-Filho, Noguiera & Fragoso 2009), the Galapagos (Cruz, Dowan, Campbell & Carrion 2005) and continental USA (Pimental, Zuniga & Morrison 2005).

Reducing local labour requirements required for control while offsetting research and development costs by accessing global markets optimises control expenditure in one sense. However, insofar as it has been accompanied by a professionalization of management it requires that symbolic capital be replaced by monetary capital and thus it appears likely that management in the region is trending towards more expensive and less extensive management locally.[26]

4.4 Socioeconomic Constructions of Pigs-as-Pest(Resource)

Understanding the broader history of management in the region shows how the economy of technologically mediated pig management has reproduced latent issues associated with non-local ownership of the region. Discourses of the region's universal significance and ownership of pigs by 'everybody' alongside the development of exogenous technological solutions is accompanied by practices and discourse supports the need for local, rather than non-local, economic acceptance of responsibility for control. What justifies expenditure on feral pig control, according to the different groups engaged in this issue, uncovers further complexities of the role of economic incentives as motivators of action as well as the divergent socioeconomic constructions of pigs-as-pest.

4.4.1 Ecological perspectives on value

The theory of ecologically based economic best practice management, proceeds from a starting point of a particular taxonomic classification of pestilence, one that serves to classify animals in particular ways and simultaneously create a frame with which to classify people in their relationships to particular animals.[27] Management theory defines 'pest' in a binary

[26]While my economic data on the costs of the Daintree trapping program is incomplete I hope it is clear to the reader that the figures shown, in comparison to the total cost of the previous trapping program, indicates a trend to more expensive management. This point is further emphasized when one looks at the much higher costs of management in just one other Shire within the Wet Tropics. In the banana growing district of Tully and the tourist area of Mission Beach, a trapping program was resurrected in 2007 when Terrain NRM, the Natural Resource Management (NRM) body formed in 2003 and designated for the care of the Wet Tropics, procured A$500,000 from a combined Queensland and Commonwealth government funding source to pay an existing pig trapper to trial 'a new approach drawing on past learning' (Terrain NRM 2009, p. 2). In addition to this funding, local government, industry bodies, government departments, and some individual growers, contributed a further A$244,535 to the program of which nearly A$180,000 was designated to pay for a trapper for the 2008 financial year with the remainder to be spent on administrative and research costs (Terrain NRM 2009, p. 5).

[27] Other authors have noted the importance of definition in the context of invasive species management (Mulcock & Trigger 2008). See also Anna Tsing (2005) for an excellent discussion of the importance of

opposition to ‘resource’; an animal may be defined as *either* a pest *or* a valued resource for a particular ‘stakeholder’ group depending on their ‘perceptions’ (Braysher 1993, Gong et al. 2009). Within this frame of understanding ecologists have described how pigs might be a pest for ‘us’ and for ‘farmers’ whilst being a resource for ‘indigenous people’ and for ‘hunters’ [Field notes 2008]. The concept that pigs might have, or be given, a resource value makes many scientists and ecologists wary because of their concerns about the implications of economic incentives on motivations to control. For example, in the case of commercial feral pig harvesting, this concern is most clearly expressed in the management literature as follows:

> [P]lacing an economic value on pigs through commercial harvesting could (a) encourage maintenance of a pig density sufficient to meet harvesting needs, and/or (b) discourage future attempts at high level control or eradication [...] these factors could offset the potential contribution of feral pig harvesting to achieving conservation objectives (Choquenot, McIlroy & Korn 1996, p. 50).

If considered a ‘pest’, theory dictates that economically optimal solutions should be defined based on a cost–benefit analysis where the control may be exacted as cheaply as possible in relation to the impacted object of value, where that object—agricultural, environmental or ‘social’—is given a dollar value. Management theory is driven by a set of assumptions about how management strategies should be devised, however it is also underpinned by an important assumption about people: that economic incentives will drive behaviour that is likely to determine positive and negative management outcomes.

The application of such rationalisation in determining how management funding should be expended was exemplified in late 2010 at a meeting I attended in the nation’s capital Canberra, in the ACT. Among the audience in attendance at this event were a number of ecologists who have authored the management theory I refer to here. At this event I was asked to present a paper based on my findings and I did, running through the key points of each of my thesis chapters (Meurk 2010). The point I was attempting to make was that specific issues of ‘scientific management’—such as feral pig management—were sites through which latent discontents were being articulated in the Wet Tropics. In my recommendations section, I suggested that management planning required that attention be directed towards rebuilding relationships and governance institutions within the region even

taxonomy to the development of modern science and Bruce Kapferer (1995) for a discussion of the development of classificatory thinking in Enlightenment thought.

if these were not scientifically optimal. My broader motivation, as I have outlined, was to advocate an approach to management that reframed the goals of pest management beyond a concern with the pest species itself to include the construction and sustenance of durable social and socio-environmental relationships more broadly.

My presentation generated extensive discussion. Much of the discussion persisted along, what I term, a 'first principles' basis where my findings were debated as dis-embedded propositions, removed from the context in which I had described them. One prominent ecologist criticised the current pig trapping program as being wasted expenditure because it was costing money without having, in his view, any quantifiable positive impact; another attendee, with expertise in commercialisation, suggested that, if people considered pests to be a problem then, by definition, did that not satisfy that there was problem? Two participants suggested that hunters should have the right to hunt and should not have to be considered managers in order to do so. No-one in the room came out in support of the local trapping program, while one person was actively against it. My presentation, focused on 'feral pig management ***in the Wet Tropics***', had been readily consumed within a conference room of predominantly scientifically trained pest management experts, to be a discussion of '***feral pig management*** in the Wet Tropics', or even as 'feral pig **[*pest*] *management*** in the Wet Tropics'. In these latter contexts, economic rationales for management failed to support the trapping logic. Moreover 'hunting', quickly categorised as 'recreation', was thus conceptually separated from a discussion of 'management' (I return to this matter in further detail in chapter 6).

Some who live within the Douglas Shire agree with the sentiments of non-local scientists, that the current trapping program is wasted expenditure. For example, one ecologist, originally from Scotland and employed by an NGO present in the region, expressed scepticism as to its value in respect to the likelihood of such a restricted program achieving sustained reduction of environmental impacts on a significant scale [Interview 2009]. Others were more derisive. Kevin, for example, refused to support the trapping program because he argued that the persistence of the trapping program created a façade of efficacy arguing that it obscured the need to address the 'real' problem. [Interview 2009]

4.4.2 Management values

While one government agency did not continue their financial support of the CBFPTP, individual managers within another, and within the local council, consider there is general support for the program from the Daintree community (refer 4.2.3). These managers deem the trapping program to be of 'value'. These locally resident managers actively work from within their organisations to source money and continue this activity:

> Sarah: We get money generally, in fact we have every year since we've been doing it, within an internal [competitive] funding program called the pest initiative. So we apply every year […] saying that we've got this Daintree feral pig trapping program, we'd like to contribute to [the Douglas Shire] council, this is what the outcomes are, and so far we've been successful every year. […] [Expenditure on pig trapping] doesn't come out of my general operating budget, it comes from a pool of funds that the [state government] agency sets aside for pest management basically. [Interview 2009]

For these government managers, expenditure is justified because it reduces localised impacts of feral pigs in key areas of human habitation and use. Managers state that the trapping program has resulted in a cessation of 'ministerials', letters from the Queensland Government Minister prompted by complaints about the pig problem, that had formerly taken up these government managers' time because each ministerial required an official response.

Gary is one of these government managers. Locally resident, Gary was originally from Brisbane and held an undergraduate environmental science degree. His position entailed administrative and personal contact with Sarah, another of the area's managers, the local council pest control officer and Nick the pig trapping contractor but did not involve participation in pig control activities. Gary was well aware of the social value of pig management and considered that trapping program worked to resolve tensions within the region:

> Carla: What qualities make management effective?
> Gary: I think um, removing tenure, like this is park, this is freehold land, this is council land and, not so much removing it but I think having a system that makes those differentiations of responsibilities less, so you can have a contractor that works across those with authority […].
> Carla: So you find trapping to be effective?
> Gary: No [laughs] contradicted myself.
> Carla: But it's good management?
> Gary: It's the only, at the moment, for Daintree coast it's a good program, and it's effective because you're dealing with a mixture of freehold land close to national park, and pigs will move across and you can put traps there […] you're getting them

> in places where the human-pig interaction is happening so, you're seeing that benefit and impact. Across the whole […] it's hard to think that the trapping program will make a significant reduction over time, all you [need is for] the funding cycle to stop [the program is dropped] and within two to five years you'd be back at the same numbers. […] To be effective across the whole of the Wet Tropics is actually high resource, high cost […] and that's where baiting programs and other kind of […] options are going to be more cost effective. [Interview 2009]

Living and working locally, Gary was supportive of scientific logics of space (refer chapter 3) and advocated a nil-tenure ideal for management and scientific control options such as baiting, if and when such control were to be readily available. Although ecologists and scientific adherents did not see the value in management for community appeasement, Gary's view represented a hybrid view with respect to issues of space and tenure within the region. Gary understood how tenure was an issue and, as he put it, he was engaged through his support of trapping, in the activity of 'lessening' this issue.

Aside from reducing pig impacts in areas of human-pig interaction, the local pig trapping contractor, Nick, serves as an important element in the successful social application of pig trapping as this field note excerpt attests:

> We went by the local service station and store to buy morning tea/lunch and so that Nick [the local pig trapper] could purchase the local newspaper. There was a man smoking outside, Nick tells this man how many pigs he got yesterday. In the store, he tells the woman who is serving that he has just got 'the' boar. They all seem pleased. [Field notes May 2009]

4.4.3 Trapping values

Nick is the local trapper, originally from Western Australia he now lives in Daintree and five days a week he drives from the Daintree Ferry to his northern most traps on the Bloomfield Track south of Wujal Wujal. Traversing this stretch of road Nick has access to all types of properties in the area: national parks, properties over which there are Aboriginal title rights, private and NGO held properties. His access to national parks and NGO properties is relatively assured, his access to private properties less so—a matter of ongoing negotiations amongst those who have a 'beef' with the Queensland Parks and Wildlife Service and those who disagree with the trapping program because they see it as ineffective. Nick has keys to unlock the gates of the NGO properties and those that prevent vehicular access to parts of the national park estate. The trapper goes about his work quietly and purposefully, often on his own although sometimes accompanied by family or researchers such as myself, and he often

engages with the landholders and managers at the properties he visits. He is constantly discussing his efficacy and the locations of damage with the people he encounters and with the Daintree ferry staff, and he relays this information onto his website and the local newspaper where his tallies are advertised.

As my field note excerpt attests, trapping is a source of interest to the local community. It is also of interest to tourists, a matter made clear on one day in particular. On one day in 2009 Nick and I were driving along the Bloomfield Track and for a while we were stuck behind a Hyundai Getz. Nick always displayed a mix of bemusement and frustration at the antics of tourists; those that attempt this rough four-wheel drive track in small two-wheel drive hire cars are a bit of an annoyance because they slow him down significantly. They would not get far as they would be unable to get past the first creek crossing. It was May, the beginning of the dry season, and as this was tourist season there were a lot of people on the road, on foot, in four-wheel drives, tour buses, campervans and unsuitable two-wheel drive hire cars.

We came to one of the traps and pulled up on the side of the road. I started to walk into the forest behind Nick and saw a pig's backside as it flicked its tail and ran away. Nick signalled me to stop and we walked back to the vehicle. There was a pig loose in the forest. He had told me previously that this happens sometimes. The pig in the trap must be a sow on heat and had attracted a boar that was 'camped' outside it. I stayed at the vehicle as the trapper walked slowly back into the forest. I could hear the noise as the sow crashed into the trap. Nick stopped, crouched down and watched, looking around to see where the boar was. I heard a sharp 'snap' bang as he dispatched the trapped pig. As this sequence of events unfolded a tour bus drove by and stopped. I saw numerous flashes as tourists took photographs and I noted that the tour operator was looking into the forest and talking. For a moment I was concerned that the tourist operator might let people out and I imagined the drama that this could cause, but the bus left and Nick came back. He did not get the boar.

A few weeks following this, I had a chance conversation at a pub on a Saturday night with a middle aged British tourist who was travelling around Australia. This tourist had been along the Bloomfield Track on a tour and I confirmed that he was with a different company to the one I observed. He told me that he saw the trapper on the side of the road and that the tour guide had explained the pig trapper's job and the pig problem to the tourists. He commented

that he found this interesting as did those with whom he was on the tour, many of whom took photographs of the trapper and his vehicle [Field notes 2009].

Expressions of interest do not come solely from international visitors. While accompanying Nick on his rounds I noted that Australian travellers, four-wheel drive enthusiasts exploring the Bloomfield Track, would stop and admire the feral pigs hanging off his vehicle and make exclamations that what he does is 'fantastic'.

A pig trapping contractor who runs a pig trapping program in the Tully/Mission Beach area, the only other organised trapping program in the Wet Tropics that has persisted following the CBFPTP, has capitalised on this interest in pigs and in addition to trapping runs wildlife tours that include a chance to see 'the best trapped pig of the day' (Boar Busters 2009). Nick is considering starting a small venture of his own.[28] Nick's actions present one counter-example to the proposition, which persists in both the ideologies of individuals such as Geoff and in pest management literature, which suggests that providing a resource value will motivate particular behaviour. Nick traps because it is a profession, and he enjoys his job. It is through this activity that tourist value has been spontaneously produced within a set of relationships that have transpired along the Bloomfield Track. Pigs-as-resource are created through these relationships precisely because they are pigs-as-pest. Nick is motivated to capitalise on the interest shown in what he does through 'rational self-interest' (Gudeman 2001), however this does not influence his perspective on his task to control. If anything, this value would likely assist his motivation to improve his trap-rate.

4.4.4 Hunting values

I suggest that pig hunters view the pig control economy endogenously, from within their own economic position. In order to contextualise their views on this matter, therefore, I begin this section by outlining the economic situation of those pig hunters with whom I have engaged. The pig hunters involved in this study, like those I have introduced so far, are almost

[28] Pigs-as-pest are not unique in providing tourist values, another pest species—the cane toad—is also of tourist value. Providing tourists the opportunity to kill cane toads has been suggested in the Northern Territory of Australia (Middleton 2010) and visitors to Far North Queensland are able to attend nightly cane toad races held at one of the bars in the tourist town of Port Douglas.

exclusively non-university educated blue-collar workers.[29] With many interviews conducted in hunters' homes, I was able to take note of the houses in which they lived and the material possessions they owned. The most common hunters' home I visited was a small 2 to 3 bedroom, single storey brick house, however, homes ranged to include medium-sized and new houses in the recent subdivisions of Mossman. Many of these homes displayed photographs, of pigs and sometimes pig tusk trophies adorned walls and mantles. The most expensive piece of material culture associated with hunting, the four-wheel drive vehicle—Nissan Patrols, Toyota Landcruisers and Toyota Hiluxes—that sat outside. The cost of a four-wheel drive vehicle constitutes a sizable portion of the total capitalisation on hunting equipment that I estimate to be in the range of A$20,000 and $100,000.

The four-wheel drive vehicle is a core feature of most types of pig hunting, the exceptions being stalking and bow hunting.[30] The four-wheel drive is not only ubiquitous it is a celebrated possession. *Wild Boar* magazine, a popular hunting magazine has a regular feature 'F@#KIN BOGGED' in which hunters humorously commemorate their misfortunes and accidents, while another prominent magazine, *Bacon Busters*, has regular features 'Pig Rigs', 'Kids Rigs' and 'Hog Quads'. 'Pig Rigs' and 'Hog Quads' pages display hunters' vehicles, including modified and homebuilt off-road buggies while 'Kids Rigs' displays children's drawings of pig hunting vehicles with the key modifications—dog cages, spotlights, radio transmitters and water containers—required for hunting (see, for example, Yaffa Publishing 2006a, 2006b, 2009, 2010).

Ownership and maintenance of these vehicles constitute the greatest cost to hunters. Most have four-wheel drive vehicle (an estimate from a Toyota dealer in 2010 quoted the cost of a new Landcruiser 79 series as approximately A$70,000, Toyota Hilux are significantly cheaper at around A$40,000–50,000 new), and some hunters (as pictured in Plate 10) own one or two quad bikes (around A$7000–8000 new for the quad bike pictured). Expenditure on pig dogs is variable, ranging from around A$50 (the price of a dog bought from the local

[29] Throughout my research I have met one hunter who was also a trained dentist and two government managers who held PhD's in the sciences and acknowledged they had been hunters in the past.

[30] While driving along a track so bumpy that the notes I was taking were near incomprehensible one hunter informed me that four-wheel drives, although ubiquitous, were not necessary for hunting. The reason for increased four-wheel drive ownership and use was reported to me as being linked to increased availability of four-wheel drive vehicles, associated with increased importation of motor vehicles from Japan in the latter part of the 20th century, and changing economic conditions that had led to greater affluence among young hunters. As we navigated this track that the hunter had previously travelled in an old two-wheel drive motorcar I wondered how either they or the car had survived.

animal shelter) and range up to A$2500 for a high quality trained, stock proof dog. The general average price range for a ‘good’ dog or puppy that has been purpose bred for pig hunting is around A$300–600 and hunters will own between 1 and 6 pig dogs. Additional expenses include firearms (A$600–700), tracking collars (GPS devices for two dogs approximately A$600), and protective chest plates (A$100–200 per dog).

Plate 10 Pigging vehicle (Toyota Hilux) with modified quad bike on trailer and pig dogs in cage. Parked on the main street of Mossman [2007]

The as-new value of these items potentially overestimates the capitalisation of many hunters. Hunting equipment may be bought second-hand or, where hunters are also landholders, can be offset against the business costs associated with their rural properties. Pig dogs are bought and sold, they are also frequently bred and exchanged amongst hunters, particularly those hunters associated with each other as part of a hunting group; equipment such as protective collars may be homemade (Plate 11). My estimate of hunters capitalisation would be in the range from A$20,000—for those whose capitalisation is a second hand 4WD vehicle only, with modest expenditure on dogs and firearms and no outlay on tracking equipment—to an upper limit of A$100,000—for those who own late model Landcruisers that have been customised for hunting along with other vehicles such as quad bikes and who expend larger amounts on purpose bred dogs and tracking equipment. Many of these hunters, being tradespeople and employed in Australia’s mining industry were employed in lucrative industries (at least prior to the economic downturn in early 2009) and could afford this outlay and the ongoing costs associated with the upkeep of dogs and vehicles.

Plate 11 Top Left, dog collars made of seat belt material with reflective tape attached; Bottom Left, pig dog with chest and neck protection, GPS transmission collar visible; Right, chest and neck protection collar made of vinyl material [2008].

Those local hunters who had experience with the bounty system acknowledged, and reported annoyance at, the fraud that took place. Tom, who I introduced in the previous chapter, his Local friend and brother-in-law, Max and Max's three adult sons (only two of whom, Jim and John, speak in the dialogue below) describe:

> Tom: [Hunting] costs us a lot of money. We do it because—
> Max: We like it.
> Tom: There's a sport in it, there's a hobby, but we also believe that we are doing something. We're not really bloody controlling them 'cos they're out of control.
> Jim: We're helping the cane farmers out to start with. [The cane gets] destroyed.
> John: We spend a lot of time and money ourselves […] I mean we do drive a fair way.
> Tom: Might do that three times a week some weeks.
> John: Yeah, and then you've got ammo and you know, dog food […] vet bills, that's the biggest killer.
> Max: […] If your dogs don't get injured you've still got vet bills to keep them healthy.
> John: Yeah like, that's what I mean, worming, wormers, fleas, tick collars.
> Tom: There's a lot in it, and there used to be a bounty um, from the sugar mill […].
> Max: But what happened with the bounty is that um, it got abused [by] people. [They] went to areas like Lakeland Downs which have shitloads of pigs, they'd do a hunt up there, they'd get 20 or 30 pigs, they'd come back and say we got them on Jo Blow's farm […].

> Jim: [But] something needs to be done.
> Max: In favour of us for a change, instead of making it so much harder for us […] it's so hard to do anything […] no one wants to agree with you […] [the way] I see [it], [there should be bounties] not just for the cane, for the whole area. For the whole state, no matter where, you got pigs $15–20 per head
> […]
> Tom: Because the price of sugar is diminishing, farmers […] will look and say, well if the pig's gonna cost me $1000 a year […] so be it […] if there was a government bounty, it wouldn't matter whose property, whether the farmer was paying the bounty or not. Some farmers still pay a bounty because they think it's of value environmentally, and a value to save their crop […] but if you had the government subsidy well then it's going to benefit everybody. […] There's still growers here who pay $30 or give the hunters fuel, or something like that or I know that others pay […] vet [bills] […] or dog food. [Focus Group 2008]

In this dialogue, Max suggested a figure of A$15-20 per head as a bounty payment. The amount of money these and other hunters indicate they would desire to earn from bounties is well below the cost of hunting as it is quoted in management policy and academic literature. In conjunction with the hunters' likely capitalisation for their sport this indicates that hunters desire a level of recompense that is sub-economic; that is, the amounts they wish to receive for their services are below what it costs them to provide the service. Figures quoted in policy and academic literature indicate that the use of dog hunting as a method costs between A$312 and A$332 per pig caught (Hillier 2002 p. 10, McIlroy & Saillard 1989, p. 362). The figure of A$312 is calculated on the basis of labour alone, calculated at A$10 per hour, with fuel and other costs associated with the upkeep of dogs not included. The latter figure, in Hillier's report, is based on a study conducted on farmland in the Wet Tropics and includes labour at a rate of A$18 per hour as well as kilometre charges and unspecified miscellaneous expenses (Hillier 2002, p. 94).

Bounties as a formal means of management, paid by the CPPB's was discontinued prior to the pig trapping program (refer 4.2.1), however, as noted in the dialogue above, private arrangements between individual hunters and landholders have persisted. These arrangements involve the exchange of alcohol, payment of veterinary expenses for dogs, fuel, or small amounts of cash for each pig that is caught. Once a strong hunter–landholder relationship has developed, or once a hunter has established a reputation for his character and expertise, hunters will tell of being 'called out' to properties where pigs are causing problems.

An export market for feral pig meat has existed since 1980 (McGaw & Mitchell 1998, p. 8) and during the early 1990s the Mossman Mill hosted a chiller box to collect pig carcasses for

this trade. Based on hunters' reports, it appears that chiller boxes were relatively numerous at this time with boxes located in a variety of areas in addition to Mossman, including Lakeland and Mareeba, all within a two and a half hour drive from Mossman. The chiller box in Mossman, as with all others, was shut down because it was deemed unprofitable by operators who ran these boxes as private businesses without subsidy. There are a variety of reasons given as to what made these ventures unprofitable including irregular and insufficient volumes of pigs given the costs of operation and transport costs, the prevalence of sparganosis and/or other diseases or parasitic burdens, and high fat content. Hunters' evaluation of the chiller boxes appeared to depend on the extent of their local knowledge, passed through direct experience or close social relationships, as shown in this dialogue between Adam, a resident of Mossman who was originally from Melbourne, and Doug:

> Adam: Something I thought that might help and it could be commercially viable is for somebody to set up freezer boxes [...] they used to have one in Mossman and Lakeland; it's probably worth looking into
> Doug: [Simon's] brother run [the chiller box] for a while
> Carla: Why did he stop?
> [...]
> Adam: Run out of money or what?
> Simon: You need so many pigs
> Doug: 50 pigs a week or something
> Simon: But, at different times of year, you can get those sort of pigs numbers but other times you can't [...] so during the week nobody's catchin' any pigs that box is just sitting there.
> Doug: Running power
> Simon: Yeah running power
> Doug: Freezer boxes are really expensive to run [...] [the freezer box shut down] 10 year ago [...] to be viable - 50 pigs per week, over 50 kilo pigs. Anything under 50 don't pay the box to have because there's not enough profit in it. The amount of time to dress it and bone it out for export, it's not good enough, they want the big pigs.
> Simon: Even Lakeland they couldn't keep up
> [...]
> Adam: So they must have put a bit of a dent in the pigs then, if they couldn't get them up?
> Doug: [...] When you can get $1 a kilo for boars they stop shooting the sows and suckers mate so it doesn't really do anything for the control of pigs, all it does, it makes [it a] money making thing. [Focus Group 2008]

Geoff and Adam did not have the same degree of knowledge, based on direct experience and social relationships, as Tom, Max, Doug or Simon. Geoff's views in particular were heavily mediated, as was made explicit by his references to ABC radio, local newspapers and *Bacon Busters* pig hunting magazine, throughout our interview. It was through these sources, for example, he had been made aware of an entrepreneur in Cairns, who was attempting to launch a business operating a mobile abattoir (Stephen 2007), and he had been in contact with

another operator of a mobile abattoir (from 'down south', as he referred) whose details he had found in a recent *Bacon Busters* magazine. Geoff was a hunter who expressed a desire to make pig hunting profitable so that it might form a major or sole part of their income. Adam, however, a mechanic who ran a successful business and owned property in the region, professed no desire to earn an income from hunting. His suggestion that a chiller box might be a good idea was just that, a suggestion. Even where hunters express a desire for personal financial recompense it is not necessarily an expression of desire for personal profit. Tom and Max, expressed desire for, and did receive, some recompense at a level that was not economic. Moreover, their expressed economic desires were explicitly linked with a desire to be acknowledged for the benefit they provide.

Some hunters I spoke with advocated a willingness to help as volunteers, in return for access to national parks for example:

> Carla: [...] do you have any opinions on how that money might be better spent? [...] do you think pig hunters, [should be] able to get a cut of that pie, [...] to make money out of it, or at least cover their own costs? [...] where do you sit on that?
> Taylor: I could, I could name quite a few people that'd do it for nothing if they're allowed access into that area. I'm talking national parks and state forests here um, they'd do it for nothing. [Interview 2007]

Finally, there were those who stated their willingness to pay to hunt and there are restricted private properties on Cape York Peninsula that allow hunters' access for a small fee.[31] Such discussion often takes place in respect to suggestions that a licensing system be instantiated. Hunters suggest that the government could derive revenue through game licenses that would also assist in policing hunting:

> Tom: if they don't wanna open it up to open slather hunting in national parks well then maybe [have] people apply, same as you apply for your gun licence, you get accepted because of your record then you go and do a course […] and then it's only […] the honest people like you and myself, we've gone and done the right thing and we've licensed ourselves and we've licensed our guns
> John: the only problem is that someone comes in behind you and shoots a cow and shoots a roo or some'n when you're out
> Tom: that's right
> John: and they find that [and blame us]. I reckon they need to have a guide
> Tom: well there could be a guide system set up as well
> John: and then they could make money off that as well
> Tom: but it doesn't need to be national park guides even, it could be you trained up to be a guide and you want this section of Lakefield that's yours […] and you look after that and then you make money out of doing the job, but then you also pay a fee.

[31] Because hunting is outlawed on state owned land in Queensland there are no game licensing charges and thus no revenue derived by the government from hunting.

> Supposedly the government and all the rest of it […] they'll all be into it for their bloody cut. [Focus Group 2008]

There are two aspects of hunters' discourse that tie this plethora of economically based opinion together: First, it is not uncommon for hunters to engage in economic arguments through which they transform themselves from beneficiaries of management to benefactors of management—Max and Tom, for example, whilst indicating a desire for some recompense also indicated willingness to pay for access to property. As shown by Tom and John's deliberation on the ins and outs of a licensing system that quickly transcended to a discussion on the value of a hunting based enterprise, hunters are happy to oscillate between beneficiary to benefactor with regards different scenarios. Second, whether hunters are themselves expressing a desire to benefit economically themselves or not, the issue they discuss is firmly embedded within a series of social relationships. Hunters use economic transactions as they assist in maintaining a set of social relationships that secure access, with their deliberations over relationships with the State displaying a similar form to those they share with individual private landholders.

Whilst happy to be both beneficiary and benefactor with regards management, hunters are quite deliberate in their desire for acknowledgement of what they do; an expression that contests the scientific dominance of management. Geoff, as with some other hunters, was curious to know how much I was being paid to do my research. Hunters' articulations of a desire for economic advantage was thus embedded in a knowledge of the expenditure on pest management and a commentary on the extent to which pests are the greatest resource for the researchers paid to study them.

Economically based discourses on both bounty payments and licensing allow hunters to voice their concerns about marginalisation, providing an opportunity for a symbolic negotiation of the relationship of hunters and hunting within the Australian State. Hunters vacillate between a symbolic rejection of State apparatus and desire for legitimate existence within it. Sociologist Jan Dizard (1994) notes that 'hunting' and 'management' are not ideologically the same, and that there may be inherent tensions in the ideologies of hunting and management (p. 123). While Dizard's point is valid, it is important to recognise that the meanings of these two terms are not fixed. Pig hunting in this part of Australia is acknowledged to have management function—particularly with regards the region's

sugarcane production. Furthermore, the meaning of 'management', as it connotes notions of governance and thus ideas of State, provides an important conduit for the negotiation of hunters' legitimate existence. This is highly important within a legislative context that does not acknowledge recreational hunting interests.

4.4.5 Food values

Hunters, managers and ecologists all associate the consumption of feral pig meat with Aboriginal Australian and German consumers.[32] With few exceptions, hunters described explicitly that although they hunt pigs, their pork 'comes from the supermarket'. Some hunters feed feral pig meat to their dogs, however others consider pig meat to be of little food value or an unhealthy dog food. Reasons hunters give for not consuming feral pig meat include laziness, an aversion to the 'rank' taste of feral pig, particularly boar meat, and the purported health risks associated with feral pig meat, specifically the risk of parasites and other diseases transmitted by pigs. Non-Aboriginal Australians who eat feral pigs, and these are often acquaintances of hunters, display taste preferences that are distinct from those of German and Aboriginal Australian consumers. Specifically, the preference among non-Aboriginal Australian consumers that I have observed is for younger, smaller pigs and/or feral pigs that have been caught and domestically reared (in violation of the law) and castrated so that the meat remains mild and animals may be treated for parasites. German and Aboriginal Australian consumers maintain a taste preference for the stronger taste of large boars.

Pigs are a valued food amongst Aboriginal Australians in the area and pigs have been 'bush tucker' for Kuku-Yalanji since the early 1900s (Anderson 1984, p. 217). One spokesperson for Cape York Aboriginal people has described the importance of feral pigs as:

> [f]ood…Aboriginal culture accords respect to the animals, plants and cultural practices that feed them. […] They have no argument about where this food came from, it is a resource that they can use and to some extent they are even keen to look after that resource, to preserve that option. […] Other protein sources such as beef have been considered, however, the logistics, carrying capacity of the country, fencing, environmental cost, feasibility and absence of "the hunt", are significant barriers to what might appear to be a simple solution. Pig hunting is not only about food. It provides an outlet for men to practise an important part of their culture (Roberts et al. 2001, pp. 14–16).

[32] Germany provides a key market for feral pig exports marketed as 'Wild Boar'. Feral pigs in Australia and German Wild Boar are the same species, *Sus scrofa*.

Historically, the exchange of food has formed an important site of intercultural engagement between Kuku-Yalanji and Europeans (Anderson 1984, pp. 205, 215). At present, health and safety regulations prevent feral pig carcasses, collected through the pig trapping program, being sold or given away as meat for human consumption in spite of expressions of interest from local Aboriginal consumers. This situation is considered unsatisfactory to many of the managers who support the pig trapping program and is described by all concerned as 'a waste'. Informally, however, the gifting and occasional sale of feral pigs by hunters and other non-Aboriginal Australians to Aboriginal people appears to be a relatively common practice. Motivations given for the gifting of pigs, and some other foodstuffs including fish heads and eels, to local Aboriginal acquaintances include: acts of charity, specifically where there is a concern that children in the region may be malnourished, transactions of mutual benefit as for example when a resident has a pig caught in a trap on their property which they need to dispose of and an Aboriginal acquaintance who is happy to come and remove the pig, or as return payment by those hunters who have been successful in gaining access to Aboriginal land for hunting. One hunter described how if he had had a good catch near a local Aboriginal community, he might drive through the community with the carcasses he had collected and sell them for up to A$50 for a large boar. This hunter had formed important ties with one local Aboriginal community and currently had secured access in return for the pigs he caught. The relationship had extended to one of responsibility where the hunter provided pigs for important events such as funerals.

There is a shared dislike among many Aboriginal and non-Aboriginal individuals for the wastage of feral pig meat. For managers' as for the trapper, burying pigs—which is how pigs caught through the trapping program are currently disposed of—is wasteful where there are known individuals who would consume them. However, for these (non-Aboriginal) groups what is deemed wastage is not related to the killing of an animal as such. Killing a feral pig is justified because of its pest status relating to the damage it causes and the abundance of this species (many non-Aboriginal hunters are capable of killing many more pigs than they could consume). For Aboriginal individuals in the area however, to kill an animal that is not eaten is what constitutes wastage of the resource. These differences in the concept of wastage are important in the assessment of different management trajectories. In the ecology–management view killing of pigs may be justified because of the damage they cause to

another resource. Ideally, once the resource being targeted is identified, the killing that is to take place is subjected to a process of deliberation that minimises damage and costs. The most likely way this would occur is, as I have outlined, through baiting—an action that renders a carcass inconsumable thus destroying its resource value.

In addition to cultural differences in food preferences, the choice of whether or not to consume feral pigs highlights differences in views on health and safety among Aboriginal and non-Aboriginal Australians. Some non-Aboriginal informants expressed concerns that pigs they considered to be in poor health (as evidenced in its overall condition—i.e. weight) were accepted by local Aboriginal people. These informants were concerned about the potential for disease, in spite of explicitly 'knowing' that hygienic cooking practices would render contracting such a disease highly unlikely. In contrast, in an interview with an Aboriginal hunter, Bob, I was advised that he was quite happy to eat both pigs and flying foxes in spite of his awareness of the diseases these animals were purported to carry. Roberts et al. (2001) suggests that the disease burden of feral pigs may have been overstated:

> [T]wo graduates did work in the Cooktown/Hope Vale area and managed to terrify the locals by explaining the various diseases that occur in pigs. Now this is all very well but these explanations […] need to be realistically measured against the health consequences […] Enquiries to Bamaga Hospital, Cooktown Hospital and Tropical Health did not reveal a single disease case directly attributable to pigs within the experience of the staff spoken to (Roberts et al. 2001, p. 15).

In spite of acknowledgement among scientists and managers, who are locally engaged with this feral pig trapping program, of Aboriginal desires, external management bureaucracies, driven by 'health and safety' concerns, ensure there is no structural recognition on this matter.

4.5 Pest or Resource? Attributions of Value

There are similarities in the way value is attributed to feral pigs among non-Aboriginal hunters, managers and ecologists in contrast to Aboriginal consumers. Specifically, for these non-Aboriginal groups, pigs have little or no intrinsic value. In the case of hunters, pigs gain value only within a relationship to another consumer, whether that is a farmer or an Aboriginal recipient. For ecologists the ascription of a negative valuation of pigs provides grounding for a positive economic value to be placed on control; the destruction of food value that may occur need not be of concern in this form of rationalisation.

While there are elements of shared value among ecologists, managers and hunters, insofar as they all see pigs as devoid of an intrinsic value, they differ in the mode of thoughts they use to reason through the economic problems of pest control. Ecological theorising quickly disembeds economic activity from the economic agent, and from its social contexts, to create a rationale based upon a categorical simplification that separates 'pest' from 'resource' that allows calculation to proceed. Insofar as this theory presents an abstract rationale to prescribe best practice management, it constitutes an example of virtualism where the theorisers describe themselves as objects of the debate, thus making themselves subject to the logic it prescribes. Contrastingly, hunters' modes of deliberation, whether or not it conveys their own wishes to profit from management, come through a subject-centred perspective.

As with the dispute I presented in chapter 3, the issue presented here is both a local level dispute and part of a reoccurring national debate. When debates such as these flare up in the news media (see, for example, Peacock 2009, 2009a) there has been a tendency for the ecology–management voice to take the propositions asserted by individuals like Geoff and to level the arguments that I have outlined in this chapter against this point of view: bounty systems are subject to fraud and chiller boxes demonstrably uneconomic. While these arguments may have validity they appear not to address the underlying mechanisms that lead to the frequent re-articulation of these concerns. Such arguments continually resurface not only because pest problems persist but because an interest group exists who formulates solutions endogenously. This endogenous form of problem solving is subject-centred however it is not necessarily self-interested, it reformulates understandings of community either through the expression of desires for local, or hunter economic advantage. Management theory does not incorporate this world view into its aims.

Both groups of non-Aboriginal parties found their arguments on the basis that the economy is an important driver of individual behaviour. In this chapter I have presented a number of counter-examples that question the extent to which economic incentives may be drivers of behaviour: Ecologists, while recipients of management expenditure are not motivated to want to control pigs because of this; Nick, who may capitalise on tourism interest can profit as a response to the actions he takes towards pigs (although it might prompt him to improve trapping practices); and hunters expressly desire, and receive, sub-economic recompense.

Thus, I suggest that individual behaviour with regards pig control is poorly explained in reference to economic benefit as a sole driver and that this case study supports Gudeman's model of a dual-faceted economy (2001).

4.6 Conclusion

The general point to be made is that economic transactions, as they are entwined with accompanying changes in technological innovations, attempt to lessen the costs of management. However, they may also actively reinforce, or disrupt, social and socio-environmental relationships. Changes in technologies and economic support can build or break relationships. The history of management in this region shows how economic intervention has been an important element in making and breaking key relationships that constitute management. The destruction and recreation of pig management institutions such as the trapping programs, even those that are problematic, has been both expensive and divisive. In particular, they reflect and reproduce the wider disconnect between endogenous identities, for whom economic transactions such as bounty payments are sought to obtain, maintain and secure advantage for a bounded community, and exogenous identities, those ecologists and managers who foster diffuse nationalised networks to and from these areas. The exchanges between Aboriginal and non-Aboriginal actors also presents a window into the wider inter-cultural relationships; the relationship between Aboriginal people and the State typified by sporadic yet enduring individual relationships and limited structural recognition of Aboriginal interests.

The CBFPTP symbolised an attempt to bridge two sets of relationships: one that served to solidify local level networks into a strategic management institution and another that extended nationally incorporating scientific best practice and accessing funding. Successful in this regard, its demise due to lack of financial support from government sources reflected a disjunct in the flow of State authority exerted in this region. Furthermore, it highlights the extent to which local residents were happy to engage with the State and State-supported (scientific) technologies within a formalised institution of management yet remained unwilling to embody this State apparatus. The 'community' proved resistant to the government agencies' 'capacity building' (Povinelli 2010).

I conclude this chapter with remarks that address current pest management theory. As Gudeman (2001) suggests, neo-classical economic approaches and cost–benefit analyses may be useful inasmuch as they seek to reduce costs over time. However, on their own, their simplification of a complex socioeconomic construction of pigs constitutes an example of virtualism (Carrier 1998). Cost–benefit approaches may be improved if they are accompanied by a detailed beneficiary–benefactor analysis that incorporates the preservation of social and socio-environmental relationships as a management aim.

5 What Constitutes Legitimate Killing? Pig Hunting, Trapping and Poisoning Practices and the Negotiation of Animal Welfare

5.1 Introduction

The role of control technologies in the institutions of management are consequential insofar as they reconfigure relationships and associations between people and the environment. They do this through the way they assist the reshaping of economic transactions and labour requirements and because particular control technologies, such as poisons, can physically displace people and animals from certain locations. In this chapter I present descriptions of the practices of pig control as they inscribe different technologically mediated human–animal relationships. I show how these practices inform identities and moral norms that are reflected in, and shaped by, a variety of bureaucratic institutions that have evolved to govern Australia's animal subjects. I show how hunters are increasingly placed within a contradictory position with regards important dominant cultural norms that have been inscribed in law.

Previous scholarship on contestations over hunting, based on case studies in North America, suggests an important division between those groups who oppose hunting as a means of killing of animals and conceptualise humans as separate from nature more generally and those who consider humans to be a part of, or interconnected with, nature (see, for example, Boglioli 2009, Dizard 1994, Robbins 2006). Boglioli characterises this divide in terms of anti-hunting 'urban environmentalists' and pro-hunting 'rural hunters'. Boglioli (2009) suggests that condemnation of hunting by urban people is less a matter of 'their highly developed ethical endowment' than that 'they are urban people who engage in urban practices and have urban views of the nonhuman world' (p. 2). Examining the link between an individual's ethical beliefs and the practices they engage in, is a matter central to this chapter.

Ideologies and cultural norms that prescribe appropriate human–animal relationships are embedded in processes that simultaneously produce identities. Practices that involve killing, which as Jan Dizard (2003) describes is an 'emotionally complicated and conflicted act' (p. 125), provide a compelling case study from which to study the mechanisms of the

relationship between cultural practices, technologies and the reproduction of cultural norms. Being confronted with the death of an animal, or animals, presents an emotionally laden instance in time where identities may be reshaped in relation to the environment as an individual recoils from, or becomes more closely engaged with, nature (Čapek 2006). The action of killing an animal is also a technologically mediated act; these technologies are not passive in their role of mediation between human and animal but exert an agency that creates patterns in human and animal lives, impacting upon human lived experience in relation to the environment (Higgs 2003, Ingold 1996, Latour 1996, Strathern 1992).

In focusing my attention on practices, I do not dismiss the importance of reflexivity in an agent's formulation of normative beliefs (Carrier 2003). In her study of New Zealand duck hunters and anti-duck hunting activists, Carmen McLeod (2007) suggests that in this contestation over hunting, each group focused on similarities between humans and animals in the justification of their beliefs. McLeod states: 'Animal rights advocates construct the view that animals are like humans (with "cultural" human rights), whereas hunters construct humans to be like animals (embedded in natural life-cycles and food chains)' (p. 165). McLeod's comment suggests that through the judgement of 'similarity' a belief that was held of one group of beings (either humans or animals) could conceptually flow to be applied to the other being. As others have shown (see, for example, Trigger & Mulcock 2005), people's beliefs about themselves in relation to other people can be highly similar to beliefs about animals further highlighting the transferability that exists between people's beliefs about humans and environment.

5.2 Live Catch Pig Trapping

Live catch pig trapping remains the state sanctioned management method in the region. In the pest management literature applicable to feral pigs across Australia, Choquenot, McIlroy and Korn (1996) describe two forms of trap design that are recommended for use. Both types of trap are designed to capture multiple pigs at a time. The first type is the square panel trap constructed with a hinged one-way gate that allows pigs to enter but not exit. The second type is a circular–shaped silo trap consisting of a funnel entrance, an arrangement of steel mesh constructed from two ends of interlocking mesh that a pig may push through to enter but which does not allow them to exit. Both types of trap are constructed from steel mesh of a

sufficiently small gauge to ensure that piglets do not escape and should be at least 1.5 metres high to ensure pigs cannot jump out of the open tops. Traps must be anchored into the ground securely with angle driven posts so as to prevent them from escaping by levering the trap from the ground and escaping by crawling underneath (Choquenot, McIlroy & Korn 1996, pp. 80–82).

The pig traps used in the Douglas Shire are metallic structures whose shape and form may vary. The predominant trap type used in this area is a single catch panel trap (Plate 12). This trap type has been adopted within the region because of concerns that multi-catch traps might capture non-target species alongside feral pigs, especially the cassowary. Instead of one way hinged or interlocking mesh doors, these trap doors open inwards and are anchored open with trip bars made of heavy round logs that a pig would knock while accessing bait but that a cassowary would be unlikely to trigger. Additionally, single catch panel traps are more portable than large multi-catch traps and many have been constructed so as to fit in the tray of a utility vehicle for ease of transportation.

There are anomalies: homemade traps made with large gauge mesh that is big enough to allow piglets to escape, and one that is fitted with a top hinged free swinging gate. The newer traps, placed along the Bloomfield Track north of Cape Tribulation, are of a different type again. These traps are kidney shaped, open topped, and with side hinged gates placed between the two bulbous points of the trap and secured in place with star picket fence posts.

Plate 12 Portable pig trap used in the Douglas Shire with swing gate. This trap is baited with bananas obtained from a local banana farm [2009].

In management theory, the advantages of pig trapping as a method of control are given as 'not interfering with normal pig behaviour (unlike shooting or dogging)', 'pig numbers can be monitored' and it is 'more humane than other methods' (Choquenot, McIlroy & Korn 1996, p. 83). The key disadvantage of trapping includes the high labour and skill requirements for successful administration and its inadequacy for large-scale control.

5.2.1 Trapping in practice

Pig trapping contractor Nick's knowledge about pig trapping is largely derived from job experience although he does attend workshops and conferences aimed at management usually run by government departments, natural resource management authorities and research bodies; he holds in his possession key government texts such as the Queensland Government's Vertebrate Pest Manual (DNRM 2005). Nick is also a pig hunter and hunts with dogs and, although he is prohibited from using dogs and/or hunting as part of his contract, he considers that his hunting experience is relevant to the exercise of trapping. Previous trapping contractors employed in the area, and many of those involved in the CBFPTP, were also hunters. Nick estimates that he has around 65 traps in place in the area he traps, approximately 40 of which will be set at any one time. Some of these traps are 'worked' (monitored) by landholders who contact Nick if a pig has been caught. In order to keep track of his traps, the trapper logs the locations of each trap onto a Global Positioning System (GPS).

Nick tries to minimise his contact with the pig traps as well as the contact other people may have with traps. To achieve this he attempts to ensure traps are not visible from the road. If they are visible, the public has a tendency to 'check' them out:

> Nick: Different scent can have an effect on them, yeah, I noticed that when I first started trapping [after taking over the contract from another trapper] […] it took me about a week before I […] started getting pigs. […] I think that may have had something to do with it, my scent and all the rest of it because I was actually just working on all the gates. […] I was actually in contact with the gates whereas when I'm just feeding them [there's] less contact with it. […] If […] there's anything around the gates I will use a cane knife or whatever, just to move all that. I try not to touch it too much. […] Some of the traps that are too close to the road, y'know, I think a lot of people interfere with them […] and probably not [out of] malice or anything, just tourists and people who are curious, they go up to the traps. […] It's also property owners. […] [T]heir kids will go and check the traps and the dogs will run down with the kids and they're just same thing, curious, just helping us check the

> traps and it doesn't really help our trapping. [conservation recorded on trapping day October 2007]

Pig traps are usually set from Monday through Friday. They are set and baited on Monday and from Tuesday through until Friday, are checked once every 24 hours, with more bait being added as necessary. On Friday trap doors are tied open with rope so that no pigs are caught during the weekend. Nick will make some exceptions, for example if there is a particular pig that proves to be elusive he may continue to set a trap over a weekend and monitor it. With this routine Nick considers that he has more success towards the end of the week, because of the diminished scent around the traps. Weather is another important factor. As Nick described, following a period of dry days, food becomes harder to find because worms, an important source of protein for feral pigs, move deeper underground, consequently bait around traps becomes more attractive and his trapping success improves.

Most traps in the area are baited with two easily sourced foodstuffs, bananas and molasses; bananas may be obtained from the local banana farm while molasses comes from the Mossman Sugar Mill. Traps that are set on the coastal side of the Daintree–Cape Tribulation Road are an exception and have always been baited with coconuts, as this is the only food source that attracts pigs into these traps. The traps along the Bloomfield Track were, as of July 2009, also being baited with coconuts although Nick was attempting to 'train' the pigs in the area to eat banana and molasses as these were easier to source than coconuts, which had to be collected off the beach. The idiosyncrasies of pigs' tastes are one of the key challenges of trapping and an engaging subject of conversation among those who have had experience trapping or hunting pigs. The way taste preferences vary among pigs, according to where the pigs are 'from', provide justifications to some hunters' taxonomies of pigs:

> Max: You put a dead, put a cow out there, a carcass, the cane pigs won't eat no, if you bring a [bush] pig from up there [the Great Dividing Range that forms the western boundary of the Wet Tropics], he'll eat that thing before [he] eat that cane. [Focus Group 2008][33]

[33] Prior to legislative change carrion was a popular bait. If cattle or horses were found dead, traps might be built around the carcasses in order to capitalise on their attractiveness to pigs. The practice of swill feeding, the feeding of animal matter to livestock (including feral pigs), has been outlawed in Queensland in the aftermath of the 2001 foot and mouth outbreak in the United Kingdom and consequently the use of carrion as a bait is now illegal (DPI 2009).

On one of the days I accompanied Nick on his rounds he described a particular tête-à-tête with a pig that had highly specific tastes:

> Nick: There's a guy just up here who's got a Heliconia farm
> Carla: Oh, what's that?
> Nick: Oh, it's just, it's a tropical flower […] and pigs are giving them a real hard time. So they uproot the bulb, the roots […] apparently there's one [pig] that's been a bit annoying him, they'll only go for one variety. […] [The grower has] got tons of varieties […] [the pig will] chew out one whole row here and then another one in the other corner, the same variety. […] That one, we've tried to trap that one for about two months, ever since I've been here and it just wouldn't go in a trap
> Carla: Did you try putting […] flower bulbs in the trap?
> Nick: Yeah, we put them in there […] we've moved this trap about 3 times and there's still, there's nothing we can do, he just won't go into the trap. I think [the grower] was going to get a dogger to come in. It's only one pig, it's the same one.
> Carla: There's one pig that has a bit of a niche
> Nick: Yes, likes the flowers. […] I might just have a chat with [the grower] and just see if the pig is still there. I haven't talked to him for a week. [recorded trapping day 2007]

I enquired after the fate of this pig, nearly 18 months after our initial conversation. Nick remembered the events and this pig. In the end, trapping proved successful and the farmer has not had any problems since [Field notes 2009].

Long-term engagements with individual pigs are a common feature of the trapping endeavour and the capture of an elusive creature is a notable event, as I witnessed one morning where one such boar was captured ('the' boar I discussed in the previous chapter). As we pulled into one property, Nick pointed out the pig damaged lawn and advised me that he had been unable to catch the pig that was doing damage to this property. Formerly flat and green, it had been dug up precisely as if a plough had been over the area. Then—'beautiful'—a big boar. Nick was 'stoked' as he had only had this trap in its current position for three days. The pig snorted as he tried to charge Nick through the trap. I felt afraid. Even though I was in no danger, the anger and strength of this pig made my heart race. Nick waited, lined up the shot and fired his .22 magnum twice, aiming for a point just behind the boar's ear, as he is required to do under his contract with the Queensland Government. I felt relief and Nick, visibly content, proclaimed 'I'm a happy man': it had taken him two months to catch this pig (Plate 13) [Field notes 2009].

Plate 13 The 'Good' pig shortly after being winched onto the truck [2009].

This turned out to be a particularly successful day trapping, the most successful I witnessed. In total, the trapper caught eleven pigs. Happy with this tally, Nick photographed his truck laden with pigs to add to his bank of photographs, some of which he publicises on his website (Plate 14).

Nick does not believe in ‘killing for the sake of it’ as he describes it, but considers that killing ‘is a part of life’ and justified in this context because they pigs are ‘a declared pest’. Nick also likes pigs; he respects them and their cunning. He enjoys the challenges associated with both hunting and trapping pigs, understanding their behaviour in response to the environment as well as their individual idiosyncrasies. There is a limit to his desires for such challenges. Deer stalking, for example, required too much effort and time for his liking.

Plate 14 A haul worthy of a photograph [2009].

Nick also enjoys the location in which he works, and often commented on how much he appreciated the views of the sea that can be obtained from the coastal road and the Bloomfield Track. If he has the time, he sometimes stops at a particular point in the road which affords a view down the Bloomfield Gorge to a U-bend in the Bloomfield River where he spends time looking for crocodiles that are occasionally spotted sunning themselves on the bank.

The practice of pig trapping is institutionalised as best practice. Management theory and Queensland Government regulations inform the trap design and weaponry that may be used as well as dictating where the rifle is to be aimed and how many shots are to be fired in order to ensure a swift kill (DNRM 2005). Once a pig is trapped no exceptions are made, no pig is released. Nevertheless, engaging in trapping practice embeds the trapper within his environment as he must take account of the weather, and other environmental variables. In this practice the trapper is simultaneously immersed within a wider range of social relationships (refer also 4.4.2). Finally, trapping, like the hunting practice I describe in the following section, is a practice through which Nick engages in photography to commemorate his victories, practice that conveys and reinforces particular ideas of property right and human–animal relationship.

5.3 Hunting

Pig hunting practices vary markedly according to the terrain hunted, the types of dogs used and the technological preferences of hunters for weapons and accessories for their dogs. Hunting practices have evolved and diversified as new technological innovations have been adopted and adapted for pig hunting. In this section I describe, through a series of narratives depicting specific hunts, some of the dominant types of hunting that take place across the Douglas Shire region and beyond. Presentation of these case studies further questions any notion of a sharp distinction between 'hunting' and 'management'. On the basis of these descriptions I further develop the concept of an endogenous identity as it is articulated by hunters in relationship to their dogs and the pigs they hunt.

5.3.1 Hunting types

A Sunday afternoon hunt in the sugarcane

I arrived at the house of the hunters I was to accompany at 3 pm on a Sunday, a new, single-storey, roughcast house located in a recent subdivision within Mossman township.[34] A moderate misting rain had been falling sporadically throughout the day. I was informed that these overcast conditions and the dampness were ideal for hunting. In these conditions the pigs would venture into the sugarcane earlier than usual; it was easier for the dogs too, the damp ground held the scent better than the dry and the dogs would not overheat in the cane. Overheating presents a greater risk to the life of pig dogs than injuries caused by the pigs themselves in the elevated heat and humidity of the sugarcane plantation within this tropical environment.

We travelled to the property, positioned along the boundary between the wet and dry tropics, and on arrival the hunters took note of the direction of the wind. Pigs have a highly developed sense of smell and this makes knowing the wind direction, and staying downwind of the pigs important. The two dogs, Bull-Arabs, had been collared prior to being loaded into the cages of the four-wheel drive vehicles at the hunters' residence, and were whining excitedly. There were three hunters today, Carol (the only female hunter I met), her husband Adam and their

[34] Roughcasting is a coarse cement mix treatment that may be spread over the exterior, usually wooden, walls of a building leaving a textured finish that may then be painted.

long time friend Will. Will and Carol took 2-way radios for communication and began walking to their different positions around the sugarcane paddock. I followed behind Carol while Adam drove the dogs around to the opposite side of the sugarcane paddock. Will walked ahead, along the sugarcane headland, a laneway of uncultivated ground (Plate 15 and Plate 16), and around a corner to stand at Blue Torch (refer 3.5.1). As Carol and I walked down the headland behind him we looked in the dirt, searching for pig tracks and paying particular attention to other signs of pigs: trampled or fallen sugar cane and clumps of fibrous cane spat out by pigs after the sugarcane juice from the stalks had been extracted.

Plate 15 Looking down a row of sugarcane ready to be harvested [2009].

Plate 16 Two examples of sugarcane headlands [2009].

We stopped and listened for the sound of pigs snapping the sugarcane and eventually we heard them. We were in position at a pig pad, visible only as a very slight depression in the

ground and some scuff marks where pigs had moved back and forth underneath a fence over time. We waited. I was standing behind Carol and I could hear the pigs' snapping the cane. The sound is a very distinctive, crisp, clear, clean snap; then, as the dogs had disturbed them, I heard the sound of pigs moving through the tubes of cane, a melodic wooden, hollow noise. I could hear them coming towards us but the density of the cane meant that I could not see them and I had no idea where they would come out. All of a sudden they appeared, racing out of the cane only metres away from us. There were three to our right and I noticed that my knees were shaking and there was no time for writing or cameras, my brain had switched states and become completely clear and focused on these animals. My heart pounded and Carol fired her gun. Then, all went quiet for a few very long seconds until one pig—who instead of running out to our right with the other three had swung left through the cane—trotted out further down the paddock. Carol went to take another shot but her red dot scope malfunctioned and her rifle jammed. What excitement. These animals are potentially dangerous, I had learnt this from seeing the angry animals in Nick's traps. On this occasion there were about half a dozen, none were shot. No one seemed particularly disappointed that the pigs were missed although they were annoyed at the malfunction of Carol's weapon and at the performance of a pig dog they had on trial. Will told me, philosophically, that you probably shoot a pig once every 100 kilometres you walk. I spent the rest of the evening experiencing an intense euphoria and had difficulty sitting still and writing up my experiences [Field notes 2009].

Figure 1 presents a simplified depiction of a successful sugarcane hunt, similar to the unsuccessful hunt described above. Sugarcane hunting is orchestrated so that pig dogs are released into a paddock of sugarcane to chase the feral pigs, located within the paddock, in the direction of the hunters who are positioned on the adjacent headlands at known exit points (pig pads) of feral pigs.

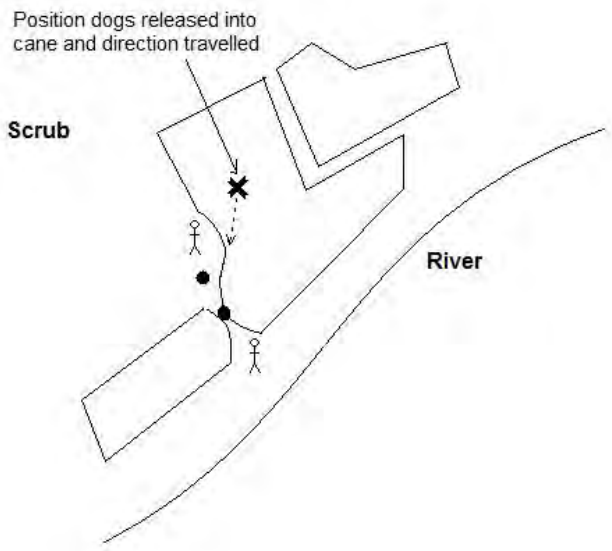


Figure 1 A simplified diagram depicting a successful hunt in the sugarcane. X denotes the approximate point at which the dogs encountered a mob of pigs and two solid dots indicate where two pigs were shot by hunters positioned at a pig pad.

The consensus among sugarcane hunters is that sugarcane dogs can be distinguished from, and are better than, dogs used to hunt in open woodland and farmland areas (this is not a view necessarily shared by hunters who do not hunt the sugarcane). Sugarcane hunters argue that if a dog is a successful sugarcane hunter it is because she has learnt to 'use her nose' i.e. she will find pigs in the dense sugarcane by scent. Hunters generally prefer bitches to male dogs, considering them to be more focused hunters because they do not spend as much time scent marking as males. Hunters also express a preference for non-neutered dogs, an issue for those who express concerns for pig hunters losing dogs that may seed feral populations. From the sugarcane hunters' points of view, a lesser dog is one that can only find pigs using sight, a sense that is rendered ineffective in the sugarcane paddocks. This style of hunting requires dogs to chase pigs out of sugarcane paddocks and into the clearings where shooters are positioned, however occasionally these dogs will catch and hold pigs within the paddocks and hunters do not enjoy having to go into the hot, humid, dense and therefore dangerous sugarcane in order to kill a pig using a knife.

Both the environmental conditions—the heat, humidity and density of the sugarcane—and the particular method of hunting—focused on dogs that chase rather than capture pigs—favours dogs that are of medium build, around 25–30 kilograms or less, and fast and agile. The working dogs that I observed were mostly mixed breed dogs and many had been acquired from the local pound or serendipitously.

Spotlighting after the sugarcane harvest

As cane harvesting progresses, the landscape around Mossman changes from one dominated by expansive giant lawns to become a beautiful patchwork of green, golden brown and black paddocks. The concentration of sugar in the sugarcane rises significantly over the course of the harvesting season (a six month period) and thus, to ensure no farmer is unduly disadvantaged by this variation, the Mill operates by cutting one paddock of sugarcane from each farm in rotation. Consequently, over the harvest season each farm will contain a mixture of dense stands of fully grown sugarcane interspersed with blackened paddocks, where cane stubble has been burnt in preparation for new sewing, and freshly cut golden brown paddocks of cane 'trash' that turn bright green as the shoots of the return crops quickly sprout. As far as hunters are concerned, these changes have two effects on the pig populations in the area: first, pigs are concentrated into smaller areas of sugarcane surrounded by increasing large open spaces, thus improving hunters opportunities to find and kill them; and second, the 'trash blanket', a blanket of debris that the cane harvesting machinery discards onto the ground, provides new and attractive food options for pigs including spilled billets of sugarcane, minced rodents that have been caught up in the process of harvest, and optimal conditions for worms to move to the surface. Shortly after a paddock has been harvested, spotlight shooting ('spotlighting') may occur.

On one evening, at around 6 pm as night fell we arrived at the same property as the Sunday afternoon hunt. A paddock of sugarcane had been cut that day. The sugarcane cutting contractors, who start at dawn, were finishing for the day leaving the truck drivers—who haul the containers of sugarcane to the Mill 24 hours a day, 5 and a half days per week—to work into the night. Pigs have been known to follow the harvesting machines that cut the paddocks and after some discussions with the cutting contractors as to whether they had seen any pigs we set off. This hunting party consisted of Will, Hugh (Adam's father who had not accompanied us on the previous occasion) and myself. Will sat on the back of the truck holding the spotlight while Hugh and I were in the cab of the truck. Hugh drove very slowly across the freshly cut paddock of sugarcane and as he did this, Will swept the spotlight across each side of the truck and behind us as well. I sat in the truck in anticipation of spotting a pig. I thought I saw something, so did Hugh and he stopped and signalled to Will to train the spotlight in the direction we were pointing. Will shone his light directly onto a tree stump.

Pity! Over a matter of weeks I had become quickly sensitised to sighting pigs. I was seeing them *everywhere*, in the rainforest on the side of the road and in the sugarcane paddocks as I drove around Mossman. Whilst I had been frightened during my initial close encounters, mainly with trapped pigs, I had quickly associated this fear with the exhilaration that followed. My sensitisation had manifested, as it did here, in noticing a lot of pig shaped rocks and tree stumps. We continued to drive over the trash blanket and Will continued to sweep his spotlight over the paddock but we saw nothing [Field notes 2009].

Experiments with method

Aside from changes in style that are associated with the changing landscape, other innovations in hunting methods are trialled as hunters seek to gain advantage over their quarry. Of particular note is a trial of hunting presented in the pig hunting magazine *Bacon Busters* (Romano 2009). Writer Clay Romano (2009) describes one hunter's experiment that arose after being 'invited to a farm near the end of the season to see how successful we can be if we all worked together, (Hunters, farmers and contractors)' (p. 82).

The method Romano outlines involves sugarcane-cutting contractors harvesting a paddock of sugarcane so as to leave a series of strips each 20 drills wide. Seven hunters and their dogs, four on four-wheel motorbikes and three in four-wheel drive utility vehicles, were employed in this experiment. Hunters were split up so that each hunter drove down a different row simultaneously. The dogs attempted to catch those pigs they were able to, and scattered the remainder for the second wave of hunters who followed on motorbikes. This particular method was judged to be a successful hunt with 12 pigs caught in one effort (a significantly higher kill rate than sugarcane hunts I have witnessed or heard about).

Cattle properties and the rainforest fringe

Styles of hunting associated with areas adjacent to the sugarcane paddocks, the borders of the cattle properties in the area, the banana and fruit farms and along the rainforested creeks, vary substantially. In addition to hunting with dogs, the hunting that takes place in these areas includes stalking and bow hunting. Hunters who are concerned that they may lose their dogs in the rainforest may employ the use of tracking collars. Alternatively, some hunt with their dogs secured on a lead to be unhooked only when fresh sign is encountered or a pig is sighted so that the dog only has to cover a short distance before the pig is caught. At dawn and dusk

hunters will walk along the creeks and the rainforest fringes with their dogs in search of pigs and often such hunts will last less than two hours. During this type of hunting, hunters will search for signs of pigs that include dried mud patches on the sides of trees and on long blades of grass that provide evidence of a pig having moved through the area rubbing their bodies against trees or their bellies over the grass as they go; scuff marks on trees where pigs sharpen their tusks; footprints and faeces. Knowledge of food and water sources are particular foci of hunting activity however the plentiful supply of these necessities in the wet tropical environment makes these less useful than that of pig signs compared with the drier areas. Nevertheless, hunters will have knowledge of the individual fruit trees that exist in the areas they hunt and be sure to visit them when the fruit begins to fall.

In the Dry Tropics

Colin hunted on cattle properties, and former cattle properties, in the open woodland of the Dry Tropics, directly adjacent to the Wet Tropics. As such, hunting with Colin required a great deal more walking and driving than did the short evening hunts I participated in around the smaller spaces of the sugarcane paddocks and the comparatively small cattle properties within the Douglas Shire. The Dry Tropics of Cape York, a veritable pig hunting mecca, always presented me with a methodological challenge. Natural scientists think in bioregions, and in these terms, the Wet Tropics and the Dry Tropics are quite different places. Inasmuch as the environment determines different hunting styles, these areas are different for hunters too. However, in their practice, hunters regularly traversed these two adjacent regions and made it clear that Cape York as a whole was a highly significant place. While the environment determined variation in hunting practice, hunters' views on this region nevertheless clearly contributed to shaping hunting identities that reflected back on the Wet Tropics:

> Adam: you know it's [hunting on Cape York] a bit of an outing. I like to go up there for a week at a time and for me that's a holiday, go pig hunting for a week […] it's good fun. And whenever I get a chance you know I got a few mates around here that have got turf [locally] you know, patches where they go. […] I go with them. I'm living on a farm at the moment and I just poke around there a little bit. [Focus Group 2008]

Most consequentially, the issues of exclusion from national parks in Cape York, and current suggestions that a further significant part of Cape York may be nominated for World Heritage

listing (Valentine 2006), 'locked up' as critics suggest, strongly reinforces local oppositions to environmental management agencies.[35]

One morning's hunt in this region with Colin turned out to be particularly challenging. After visiting some human-made dams with no luck we drove to the site of some decaying brumby (feral horse) carcasses, an attractive source of food to pigs in this area. The overpowering stench caused me to dry retch. As I stood there with my jacket held over my nose, Colin—smiling wryly, chewing a piece of grass as he stood directly over one of these foul smelling animals—announced that the pigs had not been feeding on the brumbies. He took some pleasure in my disgust and proceeded to tell me that the maggots crawling over these animals made good bait for fishing. We had arrived at this property before dawn shortly after 5 am and as the sun came up and it started to warm, I noted that the air smelt nice, a strong menthol fragrance emitted by one of the plants was especially pleasant after experiencing the stench of rotting brumby.

There was no talking as we walked. In my short experience as a participant observer of hunting practice I had quickly become sensitised, not only to the sight of pigs as I have described, but to noise as well and I was painfully aware of my footsteps, of the paper rustling as I turned the pages of my notebook, and even of my camera clicks that seemed so loud that I worried they might be a distraction. Occasionally, while walking we would disturb squatter pigeons whose sudden flight accompanied by a hollow burring noise would give me a fright and on this occasion I lost my footing and tripped over—another source of amusement to Colin. The hunters (four men, one non-hunting female and myself) were walking roughly in a line with dogs no more than 50 metres from us at any time and all within sight. Colin pointed out some pig tracks in the dust and the dogs started to get 'keen'. Someone put their hand up. We stopped and listened, stopped and listened. It was like playing Grandmother's footsteps.[36] We were walking fast and the dogs had disappeared

[35] A thorough treatment of the politics of world heritage listing in Cape York is beyond the purview of this thesis. Nevertheless, as a topic of local news and local discussion within the Wet Tropics, I have continued to observe the development of this debate. There are many similarities in divisions over world heritage listing in Cape York compared with that of world heritage listing of the Wet Tropics. This includes dissent expressed by prominent Aboriginal activists (Pearson 2006) whose views align with Local landholders from Cape York and who have formed in combined opposition to the substantial support received from external conservation oriented NGOs such as the Wilderness Society (Wilderness Society 2009).

[36] Grandmother's footsteps (also known as red light/green light) is a children's game. In this game one person is chosen to be 'it' and stands at one end of the field, while competitors begin by lining up in a row at the other end of the field. The object of the exercise is for a competitor to cross the field and tap the 'it' person on the

without my noticing. The hunters discussed where the dogs had gone—'wide, then up'—apparently. Someone thought they heard a bark and everyone started running up the hill trying to get to the dogs and pig as quickly as possible. As I ran up this hill I fell into a ditch, picked myself up, and kept going. The pig had gone quite a way and it was a fair run. Tired, I eventually had to walk and everything was over by the time I reached the pig. The two youngest men, in their mid 20s, had arrived at the pig first and one had shot it. It was a boar that they estimated to be around 85–90 kilograms (live weight), 'about average' for this area [Field notes 2009].

GPS technologies

Dog hunters may utilise tracking collars that are attached to the collars of dogs and operate on either radio frequencies or are Global Positioning Systems (GPS). Radio collaring allows the tracker to approximate the direction, and possibly distance, a dog has travelled based on the strength of frequency obtained by the receiver. The more recently available and more expensive GPS tracking collars allow the hunter to view the exact location of the dogs relayed on a handheld device (Plate 17). These technologies are the same as those used by ecologists for research (such devices would likely have been used in the home range studies described in chapter 3), and companies such as Sirtrack that manufacture these devices actively market their products to both ecologists and hunters.

Plate 17 Left, pig dog (approximately 15 kilograms), Airedale Terrier cross with GPS tracking device attached to collar; Right, handheld device that provides information on location and movement of pig dogs [2009].

shoulder. As the competitors move across the field, the 'it' person will turn around suddenly and all competitors must stop immediately. If the 'it' person detects any movement then the competitor who has been caught must return to the start.

Matt was one hunter who hunted on cattle (and other agricultural) properties and in the rainforest fringes on the border of the Wet and Dry Tropics with a team of dogs fitted with GPS equipment as an aid to hunting. Like other hunters, Matt looked out for signs of pigs, their prints in the mud and indications of their wallowing. However, I observed that he spent a large amount of time looking at the display of his handheld tracking device. Matt explained to me that his GPS display could 'tell you which dogs were wasting your time and which were doing the work' [Field notes 2009].

5.3.2 Hunting dogs

Matt enjoyed hunting in both open country and rainforest environments and was dismissive of sugarcane hunting and sugarcane dogs. His dogs were 'bailing' dogs i.e. dogs that would find and then surround or corner pigs within a small area but did not 'hang' (attack the pig and attach, also referred to as 'lugging'). In Matt's opinion this required some skill on the part of the dog. He considered that it was 'easy' to get a dog that would chase, as the sugarcane dogs are trained to do. Matt's dogs were from a line of dogs that he had bred himself over a number of generations and were small by pig dog standard, only 15–25 kilograms in weight. Once the dogs bailed a pig Matt would walk within close range and use a small calibre .22 magnum rifle to kill the pig.

All avid dog hunters take pleasure in 'watching their dogs work' as they put it and dog hunters state that this aspect of hunting is a key source of enjoyment to them. Many hunters explicitly liken pig hunting with dogs to sheepdog trialling. One hunter described:

> Stan: To see a young dog that you raise grow up and turn into a hunter and, you know, you take him out and he's looking for pigs, he's not looking for anything else, he's not going to chase wallabies, or cassowaries or birds, or bandicoots or anything like that, he's got one thing on his mind, to catch a pig. [Interview 2008][37]

Sugarcane hunters consider their dogs to be superior because of their ability to use scent rather than sight in order to flush pigs for hunters to shoot with rifles or shotguns. Hunters like Matt take pleasure in watching their dogs find and then bail pigs which they will then shoot with low powered rifles. Stan, however, was a pig 'sticker'. He owned hanging dogs but, instead of using a low powered rifle as Matt did, Stan dispatched pigs using a sharp knife

[37] Bandicoots, *Perameles sp*, are medium size marsupial rodents native to Australia.

(also referred to colloquially as a ‘sticker’), which is a common practice among Australian pig hunters. The dogs used by hunters who use knives to kill pigs must be strong enough to hold a pig secure so that at the culmination of a hunt the hunter can move in, take hold of a hind leg, and tip the pig onto its side in order to stab it in the heart. To secure a pig, dogs will hang (or lug) a pig by attaching to an ear, tail or leg. Where a team of dogs is used, dogs often take on different roles with some dogs holding (or bailing) while others hang or lug to secure the pig for the hunter. It is for this type of hunting that the stereotypical pig dog type—large Bull Arabs, Wolfhounds and other Bull Dog types—become more prevalent. These large dogs may weigh in the range of 40–60 kilograms. However, even for these forms of hunting smaller dogs such as Greyhound crosses may be used (Plate 18 and Plate 19).

Plate 18 Greyhound cross used by a hunter who 'sticks' pigs [2008].

Plate 19 Purpose bred pig hunting dog, Greyhound cross, used by a hunter who 'sticks' pigs [2008].

Pig hunting dogs are ‘tough’ and when injured, as can occur due to their close engagement with pigs, they are treated without indulgence. Where pig dogs die as a result of an altercation with a pig, hunters’ verbal and written stories commemorate their dog’s bravery and loyalty while emphasizing the dog’s agency and enjoyment in the activities in which they participate:

> Max: See they think we’re cruel to our dogs and we won’t take the dog if they don’t want to go, we’ll leave them at home or get rid of them. If we take the dog out and it starts nosing the air and running off with the other ones it’s getting keen so we’ll let ‘em go and then that’s when we’ll think ‘oh that’s going to be a good dog’, we’ll get a chest plate for ‘em then. I’ve seen an interview on [...] TV they wanted to ban [chest plates for dogs]. [Interview 2008]

My own observations corroborate hunters’ descriptions of dogs as active and willing agents in the practice of hunting. This point was best emphasized while on a camping trip with Colin in 2009. Because we were going camping, Colin had brought along one of his old dogs, Petal, who he would usually leave at home if we were going out for a morning hunt. Grey around the muzzle and moving with a noticeable hobble, Petal came along because, as Colin said, *she* liked to go camping. Petal proved to be a slight hindrance to our hunting as she was unable to keep up. This was of no great consequence to Colin, however it was the cause of annoyance to his younger son who was the same age as me, in his mid 20s. After a few misadventures that were attributed to Petal and her advanced age, Colin’s son demanded that Colin keep her secured on the utility vehicle. Spotting a pig, Colin’s son and his male friend chased and caught it with the able bodied dogs. Unlikely to keep up with the two young men, I had stayed with Colin seated on the tray of the vehicle, as he held Petal back from partaking in events, and endured the heartbreaking howls of a dog left behind.

While these hunters attempt to ensure that injuries to dogs are avoided, they are nevertheless a normal part of hunting. When dogs sustain injuries they are dealt with efficiently by hunters, many of whom are experienced amateur field veterinarians. With much hunting taking place in remote areas, hunters carry with them emergency veterinary kits that include antibiotics as well as needle and thread for cases where dogs suffer injuries that require stitching. One hunter’s first aid kit included tampons, a product this hunter had found to be particularly useful in stemming blood flow where dogs obtained holes as a result of being tusked.

The practice of hunting redraws boundaries between the hunter and their environment, it also temporarily redefines the relations they have with their dogs. At hunters' homes, pig dogs, as with many working dogs, are generally kept outdoors separated from the main dwelling in kennel arrangements (Plate 20). During a hunt however, no such spatial demarcation exists. Dogs may sleep with, and on top of, their human colleagues during a hunting trip (Plate 21).

Plate 20 Dog kennels that house pig dogs situated along the boundary of a hunter's property [2008].

Plate 21 Dogs asleep atop hunter (under blanket) while camping [2009].

5.3.1 Technologies

Whether a hunter knifes a pig or dispatches it with a firearm is a matter of both personal and canine preference as well as situational logistics. Hunters who usually knife pigs often carry a firearm for use in situations where they cannot safely use a knife. For example, a hunter may use a rifle where dogs bail pigs in a hole that a hunter cannot safely access. Similarly, hunters who prefer to use firearms often carry knives for cases where their bailing dogs unexpectedly attach, as they might if a pig is of small size. In general, firearms are not used where dogs lug because it not only increases the chance of injuring or killing a dog, but the discharge of firearms close to dogs is said by hunters to damage their hearing.

In addition to the adoption of GPS technologies into hunting practice, weaponry used in sugarcane hunting is modified by hunters to suit their particular needs. Plate 22 shows a pump action 12 gauge shotgun to which a spotlight has been attached. During a hunt the spotlight is powered by a battery pack connected by the wires shown in the photograph and carried by a hunter in a small backpack.

Plate 22 Pump action 12 gauge shotgun with spotlight attached [2009].

This innovation has been adopted by sugarcane hunters and has improved their abilities to hunt successfully at night, something they often do as they vary their hunting time in response to pigs' variable movements in and out of the sugarcane. Hunters do not consider these technological innovations to provide an unbridled advantage. Spotlights attached to rifles and shotguns, as with other innovations, are considered to be a part of the changing relationship between hunters and pigs:

> Tom: Technology has changed [over the past 30 years]. […] You [used to get] there in the morning when the sun was just coming up, nine times out of ten pigs had already left under the cover of darkness so you missed out […] whereas now, we've got battery packs, spotlights, ah, 2–way radios and red dot scopes and everything. Now technology's changed to allow us to hunt at night, and to hunt successfully at

> night. When I first started doing the night hunts it was holding the dolphin torch under your barrel and when the pig comes out you got to pick your bloody shotgun up with open sights and flick your torch on and do everything at once, whereas now you've got battery pack, you gotta switch on your gun, whatever gun type you're going to be using, and you sorta have it all ready and as they break turn the light on and sorta [...] and I think that these young fellas here now, are really, have got it easy as far as what we had when we first started hunting the cane.[38]
> Jim: Yeah, [but the] pigs have wisened up now too.
> Tom: Well, they're smartening up to the technology as well.
> Jim: Yeah, that's right, we do have it easier but pigs are bigger and, like you said, they are smarter. [Focus Group 2008]

As Tom articulates, hunters are aware of the extent to which their practices have evolved through technological innovation and, moreover, they say these changes have influenced their quarry. Tom's comments suggest a view of pigs as hybrid animals, animals that have been transformed through technological developments and social relationships (Haraway 2003). Pig dogs appear also as hybrid objects, animals that have evolved and diversified through their relationships with humans, pigs, the local environment and the diverse and changing technologies used in hunting.[39]

5.3.2 Legislative influences on hunting practice

The evolution of diverse hunting practices that persist in this region is influenced by the region's environmental conditions as well as different preferences for, and uses of, dogs and the incorporation and development of new technologies. Hunting practices are also shaped by the State through a number of legislative mechanisms. Aside from legislation that excludes hunters from lawfully entering reserves (*Environmental Protection and Biodiversity Conservation Act 1999* (Cwth)), hunting practice is shaped by weapons legislation (*Weapons Act 1990* (Qld), *Weapons Regulation 1996* (Qld)), animal protection legislation (*Animal Care and Protection Act 2001* (Qld)) and legislation regulating the lawful ownership of certain dog breeds (*Animal Management (Cats and Dogs) Act 2008* (Qld)). These legislative influences

[38] A dolphin torch is a large rectangular shaped waterproof plastic torch that contains a large six volt battery and has a handle at the top. One hunter described that, following the dolphin torch innovation and prior to the use of spotlights, Large Maglite brand flashlights were taped to rifles and shotguns. This innovation freed hunters' hands but made firearms significantly heavier and affected a hunter's accuracy.

[39] I use the term evolve to denote the evolution of kinds of dogs that are used as pig dogs. There are purpose bred lines of pig dogs however, as noted previously, the labelling of a pig dog generally denotes the purpose to which the dog is put rather than any particular claim breeding. Nevertheless, it appears that there is some development of an elite sub-group of Australian pig hunters who participate in breeding and buying high quality, line bred, pig dogs. To justify this conjecture would require further research. If am correct, it will be interesting to see whether definable pig dog breeds arise within this context in the future.

that shape hunting in Australia potentially explain some of the variation in hunting practices between nations.

While visiting family in Fresno, California during 2009—an area with its own emergent feral pig problem—I happened to meet a North American pig hunter. Although I was unable to arrange a hunting trip during my short stay I took the opportunity to conduct an interview with this individual. Among many differences we discussed including the legal definition of pigs as a game animal in California and differences in laws regarding hunters' access to state owned land, was an important difference in hunting style. I had asked this hunter how he killed the pigs his dogs caught to which he had, quizzically, responded that he used a handgun. He continued to look puzzled when I asked if anyone he knew used knives to kill pigs. After I explained that this was a common practice in Australia he proclaimed that 'Australians are crazy' and stated that he had never heard of such a practice taking place in this region of California. This discussion uncovered a subtlety in the way government legislation may shape hunting practice. Under Australian law, it is almost impossible to obtain a licence to operate handguns and no pig hunter would be able to get a licence for such a weapon (see *Weapons Act 1990* (Qld) and *Weapons Regulation 1996* (Qld)). Moreover, hunting pigs with knives, eliminates the need for a hunter to obtain a firearm licence, and means that individuals who cannot obtain a firearms licence may participate in the sport of pig hunting where they could not hunt other game, such as deer for example.[40]

Australia's firearms legislation underwent substantial revision following the Port Arthur Massacre that occurred in Tasmania in 1996. The Port Arthur Massacre resulted in 35 deaths and as a direct consequence of this tragedy, registration requirements for weapons that included the compulsory surrender of semi-automatic weapons (Carcach, Mouzos & Grabosky 2002). This legislative change continues to be used to persist a polarising commentary on the way government power has impacted on rural freedoms and lifestyles:

> Carla: Is this process [of gun registration] annoying because it's expensive or is it a lot of work?
> […]
> David: Yeah, it's painful because dad used to do it. He showed his son how to do it properly there was no beg your pardons, no back chat. You did it and they have showed their family's how to do it. […]

[40] There are a variety of reasons why an individual may not be able to obtain a weapons licence including having a police history of violent crime, or having been registered by police as threatening violence.

> Barbara: yep it was always [that way]. The trouble was the Tasmanian turnout and that in itself should never have happened
> David: Port Arthur […] that's what's made [owning] rifles and guns rather difficult
> Barbara: yeah, and people are still be[ing] killed. [Interview 2007]

These revised laws have presented further subtle constraints on hunting practice, particularly insofar as they make it difficult to obtain a licence to own and operate a semi-automatic weapon. Those that have licences for semi-automatic weapons indicate they are of particular use in the sugarcane, where, as my description of the Sunday afternoon hunt highlighted, many pigs can exit the cane simultaneously to be visible to hunters for only one or two seconds. A properly operated semi-automatic firearm offers substantial advantage in these conditions—a salient issue in matters of debate over the management 'efficacy' of hunting.

5.3.3 Epic struggles and hunters' depictions of feral pigs

As with Nick's long-term struggles with individual pigs that prove difficult to trap, pig hunters often find themselves engaged in epic engagements (cf. Dizard 1994). In the case of sugarcane hunters, such struggles between hunters and individually identifiable pigs are made possible because of the secured rights of access hunters maintain over particular properties:

> Tom: I'm pretty sure we got 'im last year, because he used to come out of the forest through a small paddock of cane and slide down a bank and into the other block of cane, and this had been happening for years. And he's so switched on that the dogs, the dogs can get 'im here and he'd run out down the other end where no one was waiting, or he'd be in the middle of the paddock and he'd run out and you'd get a shot at 'im and he was always too far away and very very cunning. And at the end of the season last year we decided —[…] even before I […] had the block, this was when my nephew had the block to hunt […] and I think before him it was probably Jack was hunting it, so probably 10 years this [pig] had been sliding down this bank.[41] This year he's no more sliding down this bank because he's gone to pig heaven. I'm pretty sure it was him. […] There's still a big pig there but this slide is not down the bank anymore. […] — There was about 30 rows of cane left and we heard him in there, the boys called me on the radio and said 'you better hurry up he's moving' and I said 'don't worry about it we're all in place' and I parked and let the dogs out, dogs raced, he ran, […] where he used to run down, through the paddock […] and then turn and go up a gully and […] into the forest, there was no cane so he was in the open and he got shot. […] He was probably […] between 90 and 100 kilos. […] He could have been anything up to bloody 15–20 years because I reckon for 10 years we'd been chasing him, because of that particular slide […] and it doesn't happen this year, it hasn't happened. [Interview 2007]

[41] Jack is the hunter introduced in Chapter 3. He described to me that a few years prior he had given up a number of properties that he had access to north of Mossman in order to focus on a smaller number of properties near his own home south of Mossman. One of these properties was now Tom's. While, as in this case, hunters may voluntarily rescind property, properties can, at times, be 'stolen'.

Hunters are explicit that this element of pig hunting—the long-term engagements in which a hunter engages in close study of an individual pig's idiosyncratic behaviours in order to outwit it—contributes to making hunting an absorbing pastime. The enjoyment that hunters get in attempting to outwit a pig contributes to the reason they both describe and respect these animals as cunning and intelligent. That these animals can also be highly aggressive and dangerous is acknowledged, however, this characteristic appears to be of secondary importance to hunters. Even in stories written in pig hunting magazines that commemorate the bravery of dogs killed while hunting tend not to emphasize the dangerous or aggressive behaviour of feral pigs.

5.3.4 Killing and the emotion of hunting

> Stan: To catch a pig, and the kill, to me, it's just a complete anti-climax. […] I like running in when I see the dogs holding up the pig, that's visually exciting […] when the dogs take off […] it's that expectation and then you hear them hit the pig and then […] that's your rush and then you run to it and it's all over, but that's [the enjoyable part], the expectation. [Interview 2008]

Hunters commonly talk about the 'rush' associated with pig hunting. Non-academic and academic literature aimed at a general (as opposed to hunting) audience on the subject of hunting are replete with descriptions that liken the process of hunting with sex, with the culmination in killing being likened to orgasm (see, for example, Dizard 1994; Kerasote 1993), or to a drug induced high (Pollan 2006). My own experiences as I have attempted to convey through the narratives I presented in 5.3.1, most truthfully, fall in the middle of these two categories. However, my experience of euphoria did not occur during my early hunts. My first engagement with pigs at close range was with the pig trapper. In the course of one morning, during which time I had been repeatedly subject to the shooting of angry trapped pig after angry trapped pig, I began to feel physically ill and was briefly concerned I might faint. My first experience hunting was also not entirely pleasurable; I had no high level moral concern with what I was witnessing, but rather a basic fear that manifested as a sick feeling, accompanied by thoughts of regret as to my choice of study. Over the course of about four hunting and trapping days the pattern of feeling intense fear (and some sickness) followed by relief when the pig was dispatched transformed into a pattern of anticipation that gave way to euphoria.

Partly because of the kinds of emotions I experienced, I found it difficult to question the mostly middle-aged male hunters with whom I hunted on this matter. Where I did, my attempts to obtain further explanation as to the nature of the feelings associated with hunting often garnered responses that were muted—'hunting's good fun'—or that suggested that these feelings were necessarily indescribable or subjective. When queried, some hunters would refer to my own subjective experience (as when one hunter said, with a grin, 'well *you* know what it's like'). Others simply agreed with me when I attempted to describe my own feelings. Stan, who I quoted at the beginning of this section, was an exception to this rule, and his comments provide the most detailed explanation of the emotions associated with killing I obtained.

Aside from my awkwardness in questioning hunters on this matter, I wondered for a while whether my failure to yield material on hunters' felt experience might, in addition to the generational and gender gaps, be related to hunters' concerns about admitting that they gain pleasure from a process that involves killing. However, in all other respects I had found this group to be quite candid. Furthermore, neither pig hunting magazines compiled from hunters' stories nor pig hunting web fora (a source of information I liken to 'hidden transcripts' (Scott 1985) because of the manner in which the webmasters restricted access to these sites) offered any further elaboration on the phenomenology of hunting experience. I have concluded, therefore, that the sometimes intense feelings associated with hunting may contribute to hunters' enjoyment. However, unlike all other aspects of hunting practice, which are importantly constituted through and thus maintain social and socio-environmental relationships, the emotions associated with the hunt remain a matter of private experience. These are not relayed among hunters verbally or textually as part of the shared experience of hunting.

A further puzzle arises in that my own experience, the 'rush' that I felt, was intimately related to the risk I was taking and the danger I felt I was in. The action of killing, an action which I never carried out myself but only observed, brought relief from this fear and it was through this release of tension that I transitioned from fearful to euphoric. However, as I have described, hunters themselves never emphasised danger, or risk, as a part of what made hunting enjoyable to them. They acknowledged that there might be some danger in hunting

but, as Nick described, considered that this was ‘just part of it’. I remain curious as to the potential differences between my own experiences of hunting and that of the pig hunters with whom I engaged; specifically, the extent to which there may exist differences in perceptions of, and thus phenomenological responses to, risk in these cases and further, how these responses may change over time for an individual. I suggest this may be an interesting subject of future research.

5.3.5 Competition and the commemoration of a hunt

A hunt may be commemorated in a number of ways, the most common forms of commemoration being photography, trophy collection of pig tusks and written stories that describe the events of a hunt. Stuffed busts of pigs are an uncommon trophy item in the region; non-existent among the hunters I met. The two pig busts I encountered during my fieldwork were both displayed in bars, where their presence was of comedic value (Plate 23).

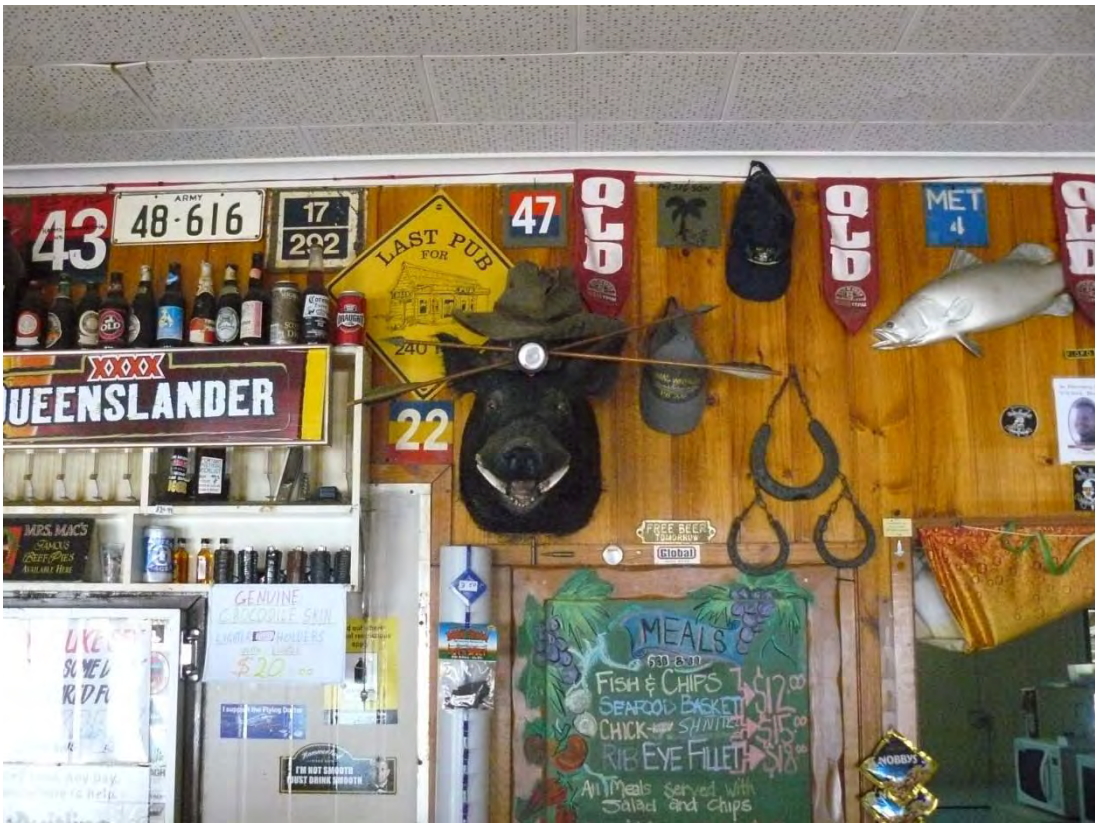


Plate 23 Photograph of pig bust at are bar in Far North Queensland [2009]

Photographs and pig tusks are commonly held and prominently displayed possessions of hunters. Plate 25 represents common forms of photograph taken to commemorate hunting activity while Plate 24 shows the pig prior to its being posed. Commemorative photographs may include the pig dogs that were involved in the hunt although they were not incorporated on the occasion shown.

Plate 24 (Left) Pig lies dead after being shot. (Right) Jaw of pig held open with a stick to display tusks [2009].

Plate 25 Pig posed for a photograph [2009].

The pig photographed in Plates 24 and 25 was the pig shot at the culmination of the morning's hunt with Colin (refer 5.3.1). Particulars of the story itself, as well as the discussion of other examples of hunting and hunters' reflections, provides important context to the interpretation of these photographs. Through the process of this hunt, as with the other hunts I described, the human hunters perceived and performed a number of inter-relationships with their environment: with their dogs, with other dead animals and with aspects of their environment that assisted their tracking pigs (including the elements of wind and rain). The

death of the pig, however, cut this network of relationships (Strathern 1996) and brought to an end this series of interconnections. This termination of inter-connections is punctuated by the non-consumption of the carcass. The process of killing enacted a separation of the human victor from, and over, his environment. Killing a pig is a bloody activity, and while hunters accept this they do not revel in the bloodiness of the hunt. Following the death of the pig, the surrounding environment was modified as the pig was posed in a manner that minimised this violence and bloodiness. The photograph commemorates the pig, its physique, and, although not visually apparent, its behavioural characteristics: those attributes that have made it a 'hard' or a 'good' pig and thus worthy of photography. As it depicts the cutting of a network of human-environment inter-relationships, it is a photograph that displays human victory and mastery with respect to the pig, to the environment, and a victory for the photographed hunter over the other hunters who were not fast enough. (As outlined there were six human participants as well as a team of dogs on this hunt however the photograph that records it depicts the successful shooter alone).

The collection and display of pig tusks serves as another testament to a hunter's passion for hunting and skill (Plate 26). As with photographs, the collection of pig tusks highlights the competitive aspect of hunting. Photographs and tusks, property that commemorate a mastery of an individual with respect to other people and the environment in which they have been gained, enter a new competitive sphere when they are displayed in hunting magazines where the largest pig and/or particularly large tusks displayed in magazines may win prizes and a list of the largest tusk sizes recorded in Australia are printed in each month's *Bacon Busters* magazine.

Plate 26 (Left) Pig tusks on display at the home of a pig hunter. This homemade, specially designed board utilises bullet cartridges for hooks. Each tusk has had a number burnt onto it, noticeable as a black line on the right side of the tusks. This number is the Douglas Score.[42] The *Bacon Busters* magazine list of record tusk sizes is affixed to the board to allow comparison with this hunter's own collection [2007]. (Right) Numerous pig tusks laid out in a hunter's garage. Tusks are taped together with the Douglas Scores written on the tape or at the base of the tusk in pen [2009].

Based solely on a content analysis of the positioning of dead animal bodies in North American hunting magazines, sociologists Linda Kalof and Amy Fitzgerald (2003) have argued that the display of dead animals in trophy magazines portrays an 'extreme objectification and marginalization of animal bodies' (p. 112) and 'conveys messages of dominance and possession' (p. 118). The images that are displayed in Australian pig hunting magazines (similar in form to that shown in Plate 25) are highly similar to those described by Kalof and Fitzgerald. However, interpreting these photographs within the contexts of their production leads me to draw slightly different conclusions about their meaning.

Both photographs of pigs and collection of tusks are acts of creating exclusive property that symbolise mastery or victory, a dominance of sorts, within a competitive engagement among hunters and between hunters and their environment and thus I agree with Kalof and Fitzgerald when they describe images as symbols of 'dominance and possession'. However, unlike Kalof and Fitzgerald, I do not interpret this in an overtly pejorative way nor as necessarily reflecting an act of marginalisation. Instead, I contend that the contexts in which these photographs are produced show how hunters consider themselves as immersed within their environment and engaged in an equal competition with their quarry, participating in a competition from which they endeavour to emerge victorious. The display of photographs in magazines extends this competitive element of hunting beyond the immediate social relationships in which the photograph was produced. Importantly, the pigs remain 'good'

[42] The Douglas score is a scoring system used for a variety of game animals in addition to pigs. The Douglas score is calculated by doubling the measurement of the smallest tusk. According to hunters, the size of tusks are not directly proportional to the size of the pig, nor are they necessarily an indication of the danger a pig poses, as smaller pig tusks are like 'needles' and can inflict a great deal of damage on a dog. Pig tusks do get larger as the animal increases in age, however overall size is determined by hereditary factors more than age.

pigs, and the stories that often accompany these photographs in magazines (which Kalof and Fitzgerald ignore) commemorate the challenges and struggles the hunter and dogs overcame in respect to their worthy adversary.

The way these photographs traverse networks that extend beyond the local region is significant. Specifically, it operates as a marker of endogenous human–environment competition as much as one of competitiveness between hunters. The movement of visual media thus present a model of social structure in which discourse traverses large networks, reproducing a common hunting culture at a national level in ways that are not collaborative. Reading this imagery within the networks they traverse—as a further example of competitive dwelling—contrasts with the collaborative social role of visual media amongst ecologists that will be depicted in the subsequent chapter.

Overall, both in direct engagement and mediated practices, hunters actively, and competitively, perform a truncation of networks. Although shared views persist through these national networks, bodies such as national pig hunting organisations struggle to grow their memberships:

> Neil: […] we've [the APDHA] been going for three years and I think there's about three hundred and seventeen members ... sorta ... that's ... to me, that's strange. There's thousands of hunters why aren't they joining? You know what I mean, that's another issue.
> Carla: Do you have any idea why they might not be joining?
> Neil: No, they might not be joining 'cos they're ... pig hunters are funny people I think

The inability of hunters to sustain strong networks beyond the enduring bonds of a hunting group (outlined in chapter 3) exhibits hunting culture as fractured. As Neil articulates (and will be discussed further in 5.3.7), this is a culture open to devastating self critique.

5.3.6 Making exceptions

In violation of legislation that prohibits the catch and release, keeping, or translocation of feral animals (see *Land Protection (Pest and Stock Route Management) Act* 2002 (Qld)) and news media that admonishes hunters in particular for partaking in activities seen to be in opposition to bio-security and control agendas (see, for example, ABC News 2007a, 2007b, 2009a), hunters do not always kill the pigs they capture or sight. I present two cases that I

have witnessed over the course of my research to demonstrate the exceptions hunters make. Because these activities are illegal, carrying with them large fines, I do not identify the hunters involved, even by pseudonym.

The Sow

In 2007, I went to visit a hunter at his home on a rural property. I drove up the driveway, parked in between various sheds and farm buildings, and walked a short distance to his house. The first part of the interview we spent seated at a table outside his home, and the second part in his garage where the family's computer was set up, and where his locked gun cabinet was housed, as he showed me photographs of his hunting as well as his firearms. At the conclusion of our interview this hunter lent me a pig hunting DVD to watch.

When I went to return the DVD, I drove to this hunter's house and parked in the same place that I had on my first visit, but something was different. I was surprised to discover a large pig housed in a pen in front of his home. I had not noticed this pig on my previous (scheduled) visit nor had the hunter introduced me to this animal. Noticing that I had noticed the pig, the hunter confessed that this large sow was a feral pig, one that he had captured as a 'sucker' (piglet). When he captured this sucker, his plan had been to fatten it up and have it butchered for food (an unusual practice for non-Aboriginal hunters as I have outlined previously). This was not the hunter's usual practice and he had not done this before nor since. The hunter confessed further that he was aware that keeping a feral pig was an illegal activity carrying with it a large monetary penalty.

On a return visit in 2008, I met with this hunter again and I asked after this pig, although I did not go and see it. The hunter advised me that the pig was still in its pen. This hunter, partially swayed by his two young sons (or so he said), had been unable to have the pig slaughtered. This pig had become a pet, the hunter admitting that, 'I go and scratch her, she loves it aye, lies down'. I am not sure what became of this pig but as of my last visit in 2009 she was still alive. The hunter was suggesting that he might take it into the forest and shoot it, but not eat it, and tell his sons that it had run away, or alternatively sell it to someone else for them to butcher and eat. I suspect that, at the time of writing, this pig remains alive.

The Sucker

In mid-June 2009, I was walking behind a hunter and for the first time noticed the moment when the pig dogs detected a strong scent and took off after a pig. We—I no longer needed to be told what was happening in order to understand—believed there was a large pig in the area having seen two very large wallows that had recently been disturbed. When the dogs left, I thought perhaps they were after this large pig. Then, some squeals: high-pitched squeals, not the noise of a full-grown pig. We ran and caught up with the dogs that were all focused on something small. The hunter went in, growled at his dogs to move away, and rescued from their midst a very small piglet. Probably not yet weaned, the piglet had received a slight gash to its ear in the melee but appeared otherwise unharmed. After contacting an acquaintance who raised pigs to eat and who did not have room for any more, this hunter released the piglet. Over the next few hours that I spent with the hunter he returned, unprompted, to discuss this animal and to point out that there was a limited chance this piglet would survive. Although he thought it was old enough not to require its mother for sustenance, unless it found its mother and siblings quickly he indicated it would most likely be caught by a dingo. He had known this when he released it. In spite of this knowledge, that it would likely reach a bloody end, the hunter as he said 'did not have the heart' to kill it himself.

5.3.7 Allegations of cruelty

Many hunters whom I met were reticent to talk with me at first and asked whether I was a member of the RSPCA or an animal rights' group before they would consent to be interviewed. My correspondence with an RSPCA representative in 2008 confirmed that the organisation is opposed to hunting. Hunters are well aware of the accusations levelled at

them—that they engage in practices that are ‘cruel’ both to their dogs and to the pigs they hunt. In 2010, the Australian newspaper *The Sydney Morning Herald* reported that ‘animal rights activist and former television star’ Lynda Stoner had gone undercover, posing as pig dogger Linda Brown, in order to uncover what were suggested to be depraved actions of these hunters. The Herald reported Lynda as saying:

> It’s such an underground culture. I’ve spoken to other hunters; they are so disparaging of pig doggers. They are the lowest of the low […]. If they’re proposing this is to reduce the numbers of feral animals, it’s the most disgusting, most barbaric, most brutal thing they could do. (Jensen 2010)

Hunters are charged with a variety of cruel acts. One of these is the practice of mutilating pigs and re-releasing them into the wild to be caught again at a later date. Plate 27 shows a pig that has, prior to being killed, had its ears amputated. It is known, although considered an uncommon practice, that some hunters remove the ears and tails of pigs before releasing them, so that they are ‘more of a challenge’ for their dogs to catch the next time. This practice is by no means widespread and is condemned by many pig hunters with whom I spoke.

Plate 27 Photograph sent to me by an anti-hunting colleague of a pig caught in the Daintree rainforest. This pig has had its ears amputated, most likely by a pig dogger. [Anonymous 2008]

Similar practices known to occur involve the castration and re-release of pigs that are then referred to as ‘Barras’. In addition, these pigs may have their bottom tusks removed, often done by bashing them with a rock, to prevent grinding thus making the tusks grow bigger.

While hunters find themselves increasingly under threat from well organised animal welfare groups, criticism of their practice also come from other current and former hunters. Ed, a

grazier and fourth generation Far North Queenslander, that in his semi-retirement was caretaking a cattle property in Daintree, had hunted pigs himself in the past and he allowed some hunters access to the property he managed. Ed was well respected in the area, including among other hunters I met. Overall however, he was critical of pig dogging practice:

> Ed: It's a pretty bloody sick culture.
> Carla: In what way?
> Ed: [...] [S]ome of them couldn't care less about their dogs. That's not all of them you know, there's some that come here that treat their dogs like family members, look after them beautifully. But some that I've seen come to the gate, no, you wouldn't want to let your dog near 'em aye, they've got no feeling for their animals. [Interview 2008]

An amateur bush poet, Ed had written a poem on the subject:

If the Cap Fits

Dogs in a crate, like worms in a tin
With a perpetual snarl, forgotten how to grin
Where a tusk has ripped a raw flap of skin
'Quiet you Mongrel! Or I'll kick your guts in'

Oversized heads and great powerful jaws
Nails torn out, grass seeds in their paws
Battle scars all over from ethnic cleansing wars
Sworn purpose from birth – to exterminate boars

Doin' the Cape in a 4WD Jammed in the Back
Eyes clogged with grime from dust on the track
Tongues lolling out and ears hanging slack
Slipping and sliding trying to avoid their own cack

Stubby in hand 'that's my dog in the cage'
The size of the dogs, a pig hunters guage
Locked up in confinement to contain the rage
Their occupation denies them any chance of old age

Pit Bulls, Mastiffs, Bull Terriers top the market
Always spare dogs, in case some kark it
The bigger the dog, the bigger the target
The most popular names 'Boof head' and 'Sargent'

All over this country with no place a failure
Dogs travel in cages, 'cause let loose they'll bail ya
With stories of monster boars the owners regale ya
But specially in NQ PIG DOG CAPITAL OF AUSTRALIA [Ed 2008][43]

[43] NQ: North Queensland

Stan's pig dogs were named Spartan, Beast, Fish, Shorty, Mia, Fred and Jet. Through a discussion of his dogs, their origins and names, I learnt about the unfortunate story of Mia. Mia had sustained a serious injury in an altercation with a pig due to being taken hunting without chest and neck protection (refer 4.4.4) and had been left untreated by the owner. Through his relationship with the local vet, Stan had taken ownership of this dog:

> Stan: Mia already had her name […] she come from a home where she hadn't been looked after and the fella was taking her out on big pigs with no protection and she still recovering from, still got a seven inch gash on her shoulder just been stitched up. And he wasn't looking after her at all, and I took her on.
> Carla: So how did you do that, did you just say I'd like your dog?
> Stan: Well I went to the vets and [Mia] was in there with her shoulder hanging out and [the female vet] said, 'do you know who owns it?' and I said 'I think I do'. I made about six or seven phone calls and tracked all round the local pig hunters and I spoke to his mum and said 'it's obvious he's not looking after it and I heard some bad reports if you want me to take it on I'll give it a good home'. And he rang back and said 'take the such and such thing'. So, I've had her here for about a week and she's never been happier
> Carla: How much did she cost you to stitch up?
> Stan: Well, it was going to be about four hundred dollars plus […] she sat in the pound for two days with her shoulder hanging out, but they let me get away with it all. Yeah, I've got a pretty good relationship with the vet so she just said, 'look Stan, I know you're going to [give her] a good home so take her.' [Interview 2008]

Plate 28 Mia recovers with Stan from a shoulder injury due to a pig [2008].

As it stands in law, the *Animal Care and Protection Act 2001* (Qld) makes it an offence to allow one animal to injure or kill another animal if:

> (a) the first animal was under the person's immediate supervision; and [...] (b) the person—(i) was aware of the second animal's presence; and (ii) ought reasonably to have suspected that the second animal was immediately vulnerable to the first animal and was likely to be injured or killed by it; and (iii) did not take reasonable steps to prevent the injury or killing. (s 37 pp. 30-31)

While this legislation would effectively outlaw hunting with dogs, the Act carries a key exemption. Section 42 of the Act, under the heading 'Feral or pest animals', stipulates that it is an offence exemption if the act is committed 'to control a feral animal' (p. 33). This legislation makes it imperative that hunters justify their activities as pig control.

5.3.8 Engaging with the issue of cruelty in relation to other technologies

Hunters contest their hunting practice in relation to other technologies through which they produce a discourse that simultaneously exonerates their practice while deriding the method of control associated with those they oppose. As already mentioned, compound 1080 (sodium monofluoroacetate) is the only poison currently used by managers in the region and is used around some sugarcane farms bordering the WTWHA. Opposition to the use of 1080 is prevalent among hunters, the region's Greenies (including Carl) and animal welfare groups. Hunters frequently compare their hunting practices with the use of 1080 for management, describing that by contrast to hunting—enjoyed by dogs and in which pigs are killed quickly—1080 poisoning results in the slow death of pigs and is a risk to non-target species including dogs and dingoes:

> Bruce: When [duck shooting] got banned in Queensland […] [the] conservation minister, she said now, 'in today's day and age there's no place for such a barbaric sport'. Well I must be a barbarian, I must be an evil person. I grew up, as a tradition down in Victoria, duck shooting. […] I think baiting, if anything's barbaric it's […] going over the scrub in a helicopter with non-selective baits and dropping them out hoping pigs are gonna get 'em, where a cassowary could get 'em or ah, even if a pig gets, a little sucker eats a bait and dies, if a wedge tail eagle comes and eats that, eats that pig, it's going to die. So I can't understand their theories about baiting is good where hunting is bad. […] 1080's a cruel poison, if I was a pig, I'd rather have a dog grab me by the ear and a bloke come in and stick a knife in than eat a 1080 bait and slowly, slowly die a horrible death. I mean, they say pig hunting's cruel and that sort of thing [dying from 1080 can take] hours. [Interview 2008]

It is common for hunters to mention having seen (first hand or, as is becoming increasingly common, through the internet site YouTube), heard or read of deaths to pig dogs who have

been accidentally poisoned, and the slow and agonising death they have endured as exhibited through their convulsions and whining as they die. Vociferous opposition to 1080 was usually presented by hunters without prompting, however as individual hunters appeared to become more comfortable with me, either during an interview or over the course of a number of engagements, they became more candid. Overtime, some hunters' vocalised opposition to 1080 was tempered against other considerations. These hunters did not like 1080, genuinely believing it to be inhumane, particularly in comparison to hunting. However, they were empathetic with landholders' motivations for poisoning where this took place, recognising that poisoning was necessary to reduce pig numbers; it is generally acknowledged by hunters that hunting alone is insufficient control.

5.4 Cruelty, Agency and the Impact of Direct Engagement on Hunters' Moral Judgements

In contesting charges of cruelty, hunters emphasise the agency of both pigs and dogs, through characterisations in which they may, as Bruce did, project or extrapolate, a value judgement from the basis of a subject centred deliberation. The examples presented of exceptions that hunters make with regards to the pigs they hunt highlights the influence of direct engagement on what constitutes morally appropriate behaviour for an individual. The trapper is not subject to the same moral quandaries as hunters. Not only is the killing he exacts routinised through its professionalization, including the number of shots he is to fire and the parts of the pig he is required to aim for, it would be dangerous to attempt to release a trapped pig. As I will show in the following section, hunters' moral dilemmas do not arise in the abstracted engagements between humans and animals that are facilitated by baiting technologies and support by animal welfare ideologies.

The difficulty that hunters face is that their actions place them at an unfortunate nexus between two prominent ideologies that are enforced in the case of feral pig control: animal welfare and conservationism (cf. T. King 2005). Hunters are often characterised as 'cruel' to both their dogs and to the pigs they hunt. Simultaneously, hunters are constructed as being uninterested in eradication and in achieving conservation outcomes; evidence of 'catch and release' such as I describe is used to support this hypothesis. Though illegal, these examples demonstrate that hunters' engagements with these declared species have affective elements.

5.5 Baiting and the Science, Bureaucracy and Advocacy of Animal Welfare

The baiting that has taken place in the Douglas Shire requires careful monitoring so as to avoid any possibility of accidental poisoning of humans and non-target species in the area. Baiting in the area currently involves placing non-laced baits, such as bananas and mangoes, in target areas. These non-laced baits are monitored with the use of cameras to ensure they are consumed by pigs and no other, non-target, animal. If monitoring staff are satisfied that baits are not being consumed by non-target species poisoned baits can then be laid out. After control has been carried out, carcasses are buried and any remaining bait disposed of. During my final field trip to Mossman in 2009, a planned baiting operation could not proceed after camera footage uncovered ponies, ridden by local children, feasting on non-laced baits. News of this occurrence reached me, not from the managers involved, but from a number of different local hunters who divulged this information with a sense of what may be described as subversive mischief.

Although hunters express opposition to the use of 1080, it is the animal welfare organisation RSPCA that has been increasingly active and influential in its opposition to the use of 1080. The RSPCA maintains an operational definition of humane killing, as written in RSPCA policy, that states 'an animal must be either killed instantly or rendered insensible to pain until death supervenes' (RSPCA Australia 2008). Using this criterion, along with assessments of risk to non-target species, an RSPCA spokesperson with whom I corresponded via email during 2008, described the organisation's position on different methods of control that may be used for hunting. Shooting, if conducted by suitably trained personnel, was regarded as the most humane means of control. Similarly, as long as traps were of appropriate design, checked frequently, and animals dispatched appropriately, trapping too was considered humane. Hunting, particularly with dogs and knives, was considered inhumane on the grounds that this method is 'likely to cause significant stress and potential injury to the pigs'.

In late 2007, the RSPCA sent a media release to major newspapers around Australia that contained information published in a peer-reviewed journal on the subject of the humaneness of 1080 (S. Bevan 2007, Hall 2007). The journal article that was the main focus was one of two refereed scientific publications written by RSPCA employed scientist Miranda Sherley

(2004, 2007). These papers presented an assessment of symptoms associated with 1080 poisoning across a range of species, based on a literature review, from which it could be ascertained whether 1080 may be considered a humane poison. Sherley's finding that 1080 is not humane, was based upon criteria in which humaneness was defined in terms of the 'speed and mode of action, appearance and behaviour of affected animals, experiences of human victims, long-term effects on survivors, and welfare risk to non-target animals' (Sherley 2007, p. 449).

Compound 1080 is described as being lethal following ingestion when it is metabolised to produce the substance fluorocitrate that disrupts the tricarboxylic acid cycle (also known as the Krebs cycle) and functions to starve cells of energy. In addition, 1080 causes other, non-lethal, side effects (Sherley 2007, p. 449). 1080 is lethal for a wide variety of vertebrate species with carnivores as a group considered to be most susceptible to the poison while herbivores as a group are considered to be the least susceptible. The occurrence of this compound in the flora of Western Australia means that there is some regional variation in the tolerance of Australian faunal species (McIlroy 1982, Mead et al. 1985).

The onset of signs of poisoning for feral pigs appear between 1.9 and 47.3 hours after ingestion the onset of death occurs between 2.8 and 80 hours after ingestion of the poison (Sherley 2007, p. 453). Sherley describes the physiological signs of poisoning as:

> Including lethargy, retching and vomiting, trembling, faecal and urinary incontinence, unusual vocalisations, hyperactivity, excessive salivation, muscular weakness, uncoordination, hypersensitivity to nervous stimuli, and respiratory distress. Localised nervous signs including tail twitching, twitching or jerking of limbs, twitching of facial muscles, nystagmus, and tetanic seizures, are common, and may progress to generalised convusions. […] Death may occur either during convulsions or during these lucid periods. […] Several of the signs of toxicoses listed above are potentially painful and/or distressing. (Sherley 2007, p. 454)

Experiences of human patients who have been poisoned are reported as being mixed, with some accounts indicating that human victims experienced suffering while other accounts indicate this was not the case. If non-lethal doses are administered, feral pigs may experience short-term partial paralysis and convulsions that can cause further injuries to be sustained (Sherley 2007, pp. 454–455). The risk to non-target species, though mitigated by the presentation method of the bait, is the final welfare concern the article mentions (Sherley 2007, pp. 455–456).

The RSPCA was unsuccessful in its attempts to have compound 1080 de-registered. In November 2007, shortly after the publication of this academic article and the media release that followed, the Australian Pesticides and Veterinary Medicines Authority (APVMA) responsible for the registration of veterinary medicines and pesticides marketed in Australia released its report of a review of this poison, skirting the issue of humaneness on a bureaucratic technicality and supporting its ongoing use:

> From the public submissions made to the review, it was evident that there was strong public concern about the humaneness of 1080, and that the community considered that this issue should be considered by the review. While the APVMA noted the community concerns, it did not base its regulatory decisions on this matter as animal welfare is not a specific criterion under the Agvet Codes that can be taken into account in making decisions about the future use of 1080. (APVMA 2007, p. iv)

Whilst the APVMA avoided engaging with the issue of welfare within the bounds of its organisational directives, animals are increasingly considered subjects within the State that are afforded legal rights. Highlighted most explicitly in Australia's Animal Welfare Strategy (AAWS), a document produced by the Commonwealth's Department of Agriculture, Forestry and Fisheries (DAFF), 'sustainable improvement' in the ethical treatment of animals is intimately linked with scientific and technological advancement (DAFF 2005, p. 7). Additionally, Queensland Government's animal welfare legislation, the *Animal Care and Protection Act 2001* (Qld), states one of its purposes as being to 'provide standards for the care and use of animals that — [...] allow for the effect of advancements in scientific knowledge about animal biology' (s 4, p. 12).[44] These scientific ways of formulating humaneness reproduce the scientific construction of an animal as a collection of physiological, chemical and behavioural characteristics and processes. In contrast, hunters describe dogs and pigs as individual sentient agents.

Animal welfare groups such as the RSPCA and ecological–management organisations differ in their representative views on the use of 1080, an issue in which the views of the RSPCA and hunters are closely aligned. However, an agreement on the importance of scientific reasoning with regards issues of humaneness means that the RSPCA and ecological–management agencies are effective collaborators with regards the production of policy directives for the development of technologies. Evidence of this collaboration between

[44] The importance of science in this legislation was positively emphasised when this legislation was passed. The Act was explicitly developed in consultation with animal welfare groups such as the RSPCA (Queensland Government 2001).

RSPCA and the scientific community is apparent in the production of jointly authored policy documents. For example, the report titled *A model for assessing the relative humaneness of pest animal control methods* (Sharp & Saunders 2008), a document developed to satisfy the AAWS, was authored by NSW government employed scientists in consultation with a steering committee that included RSPCA scientist Dr Bidda Jones.

The stipulated dependency on science and technology in the 'sustainable improvement of animal welfare outcomes' (DAFF 2005, p. 7) explicitly links moral deliberations with scientific problems. Not only is improved welfare considered to be grounded in technological innovation, but welfare itself is increasingly scientised as the incorporation of animals into the realm of the State, and subject to legislation and requirements for compliance, brings with it a need to define agreed upon standards of what constitutes humane killing of animals.

The difficulty of such a task has not gone unnoticed, and *A model for assessing the relative humaneness of pest animal control methods* (Sharp & Saunders 2008) devotes a number of pages to an assessment of the differing definitions of both 'humaneness' and 'welfare' and the difficulties associated with inscribing definitions into law (Sharp & Saunders, 2008, pp. 12-13). In pursuit of the desired 'objective' measures of welfare are listed a number of assessment criteria as follows:

- 'Physiological and behavioural indicators of pleasure;
- Extent to which strongly preferred behaviours can be shown;
- Variety of normal behaviours shown or suppressed;
- Extent to which normal physiological processes and anatomical development are possible;
- Extent of behavioural aversion shown;
- Physiological and behavioural attempts to cope;
- Immunosuppression;
- Disease and body damage prevalence;
- Behaviour pathology;
- Brain changes;
- Body damage prevalence;
- Reduced ability to grow or breed; and

- Reduced life expectancy.' (Sharp & Saunders 2008, p. 14, formatted as in original)

Of particular note in this list of criteria are references to animals exhibiting 'normal behaviours', the importance of 'indicators of pleasure', 'disease and body damage prevalence' and 'reduced life expectancy'. The conceptual linkage between 'normal' animal behaviour and 'pleasure' is further emphasized in the policy statement of Queensland Government's Department of Employment, Economic Development and Innovations, Primary Industries and Fishers (DEEDI) that states:

> People in modern society increasingly expect a better quality of life. As this quality of life increases there is an expectation that animals, whether pets, pests or livestock, are treated humanely, that is, they enjoy reasonable standards of animal welfare and do not suffer unjustifiable, unnecessary or unreasonable pain. (DEEDI 2007)

Ecological scientists tend to remain advocates of 1080 as do local managers in the Douglas Shire, particularly in the absence of the availability of other poisons (refer chapter 4). Within the pest management literature, one of the ways used to justify the continued use of methods that may be 'less humane' but more effective than other controls is through a utilitarian calculus that employs counterfactual reasoning and non-anthropogenic factors in the assessment of welfare maximisation. For example, one research paper states that 'less humane' but more effective controls

> may reduce the overall welfare compromise to a feral pig population. This is because the application of an effective control method can lead to a sustained reduction in feral pig numbers, thus minimising the number of feral pigs that are required to be exposed to control tools in the following year. Furthermore, the reduction of feral pig populations will reduce the number of feral pigs which undergo 'environmental' deaths each year. Feral pigs can undergo an extremely high rate of natural mortality annually in Australia, due mainly to adverse environmental conditions. For example, the average mortality of piglets can range from as low as 10% to as high as 100% each year (due to predation, starvation, dehydration, exposure and death from disease). [...] These environmental deaths clearly cause welfare compromises in feral pig populations. It could be argued that controlling feral pig populations to low levels with effective control tools can result in improved welfare outcomes since large numbers of potential 'environmental' deaths of feral pig are avoided. (Cowled & O'Connor 2004, p.7)

In this report, and in other academic literature on animal welfare, 'humaneness' not only includes the welfare benefits that result from non-existent and therefore non-suffering animals, but the comparison leverages the welfare compromise an animal may face by being subjected to the (non-human) environment (Cowled & O'Connor 2004, Mason & Littin 2003, Sharp & Saunders 2008).

5.6 Policy and the Production of Technologies

Bureaucracy and shared belief in the value of science and technology assist collaborations between animal welfare organisations and pest management organisations. The policy documents and academic literature that have been produced to address animal welfare function as social ties (Latour 1993b). The documentation that is produced, as with other examples of virtualism, define the parameters of what an animal *is* in such a way that it presents a particular rationale for the ways they may be appropriately treated. Thus, a document that is titled *A model for assessing the relative humaneness of pest animal control methods* (Sharp & Saunders 2008), through its scientific description of humaneness, prescribes a trajectory for the production of new technologies of control that will satisfy the criteria. The exploding corn dog—an object that comprises a device covered in a deep fried fatty coating and conceals a small explosive designed to detonate when bitten by a pig releasing a capsule of cyanide into its mouth—is one technological complex that has been suggested that addresses the humaneness criteria stipulated by animal welfare organisations. Similarly, ongoing research and development of bait matrices, objects that are target specific to pigs and are developed independently of the means of poisoning, fold these formalised scientific animal welfare ideologies into their development.

Creating technological complexes that address welfare criteria does not eliminate engagement between humans and animals. For instance, pen trials currently carried out in Southern Queensland and South Australia involve direct engagements between field staff and pigs. However, unlike hunting and to some extent trapping practices, it is not through these engagements that socio-technological practices are developed (although if trials fail to achieve the intended outcomes new options must be designed). Rather these trials, that require a small number of the human participants compared to those involved in the entire process, take place near the end stage of the design process. Direct human–animal engagement occurs at the end of a chain of decisions that exist within a broader web of abstract, and textually mediated, relations.

5.7 Hunting, Trapping and Baiting: Endogenous and Exogenous Practices, Identities and Animals

There is an evident similarity between trapping and hunting practices in contrast to the practice of poison baiting. The former practices are characterised by direct engagements in which the human subject understands himself as immersed within his environment: in relation to the wind, his dogs, life-cycles, and as was discussed in chapter 3, in relation to physical space. For hunters and trappers, engagements with pigs are competitive practices in which victory and mastery is commemorated through photography, trophy collection and the non-consumption of meat. As immersed agents, the hunters and trapper exist endogenously within this network of socio-environmental relationships and through these competitive practices they perform a process of emerging dominant, creating exclusive property as they do.

The moral decisions that hunters make on an ongoing basis with respect to the individual animals they hunt are not a feature of trapping. Its institutionalisation as formal management and the logistics associated with trapping technologies means the trapper does not make exceptions. The practice of baiting further removes these moral ambiguities to which hunters are subject. While human involvement is currently required, the trajectory of research and development is directed towards limiting human involvement in the process creating an exogenous relationship between human and the environment of focus. In placing the human subject in an exogenous relationship within their environment an exogenous animal has been constructed as well. Through these legislatively and technologically mediated acts of killing, the animal is symbolically drawn away from the harshness of its environment and within the sphere of scientific care and State protection.

McLeod's (2007) focus on conceptual 'likeness' neglects the processual aspect through which identities are reproduced in relation to these norms. To recapitulate, McLeod (2007) suggests that: 'Animal rights advocates construct the view that animals are like humans (with "cultural" human rights), whereas hunters construct humans to be like animals (embedded in natural life-cycles and foodchains)' (p. 165). Through the process of debating issues of cruelty, both groups use human similarity with animals to build their viewpoints. Animal welfare scientists extrapolate from human suffering in order to make inferences about animal

welfare criteria while hunters employ first-person reasoning in order to make value judgements on matters of animal suffering. Those who adhere to an animal welfare ideology work to extend the human benefits of science, technology and the State to animals. In attempting to draw animals more closely to humans, these animals are conceptually dis-embedded from their non-human, and non-animal, environment. This action presupposes a hierarchical relationship of humans in relation to their environment and, as Ingold (1993) suggests of environmentalism more generally, 'signals the culmination of a process of separation' (p. 31). Hunters on the other hand, seeing themselves as immersed within an equal engagement with animals, appear to be active in attempting to create a separation and hierarchy. The material I have presented in this chapter thus highlights that identities are dynamic, and slightly unstable, processes. Through practices that are sites for human interaction with the environment, whether these are direct or abstract, identities exist in a constant state of reformation.

5.8 Collaboration and Conflict in the Production of Technologies and Discourse

Hunting practices are shaped by a variety of legislative conditions. These myriad legislative mechanisms place hunters in a number of binds that increasingly restrict their abilities to act in ways that are legal. Dog hunters must justify their actions, both legally and politically, as feral animal control. To defend charges that they may be cruel, to display the manner and extent to which they form affective attachments for their quarry, places them as deviants with respect to other pest control legislation. One of the ways hunters contest this position, is, as Bruce did: through expressions that compare the humaneness of their own practices with that of the technologies that create symbolic and material barriers to the ongoing practice of hunting. Expressions of scepticism towards technologies, although referencing genuinely held beliefs about their cruelty, are produced primarily to contest marginalisation.

Hunters' views on the use of baits, such as 1080, are closely aligned with the views of animal welfare organisations and these are different to the views of ecologists and managers (for further examples: see ABC News 2008a, 2008b). However, animal welfare legislation that permeates government departmental policies, legislation and management, insofar as it is firmly based within a belief about science and technology, sees animal welfare groups,

ecologists and managers working together while hunters are excluded. Pig hunters are not explicitly excluded from these consultative processes and advocacy organisations such as the Australian Pig Doggers and Hunters Association Inc. (APDHA) have developed to contest such policies as they may impact on hunters. Organisations such as the APDHA have, however, had limited success in influencing such policy. Thus, although both baiting technologies and hunting practices are, as I have shown, evolutionary processes, scientifically-based collaborations continue to support baiting trajectories while starving support for trajectories that might incorporate and develop hunting.

5.9 Conclusion

The material presented in this chapter extends my depiction of endogenous and exogenous identities to examine how they are (re)produced through practices of pig control and killing that simultaneously inform the social construction of endogenous or exogenous animals. The dual constructions of animals that inform different kinds of moral deliberations evident here show how geographic and conceptual 'distance' informs beliefs about reasonable action. Presenting the diverse range of changing hunting practices that exist in the Douglas Shire and its surrounds I demonstrate the extent of overlap that exists between hunting practices that may be deemed 'management' and those that may be deemed 'recreation'. Finally, I focused in particular on an interpretation of hunters' photography and trophy collection as acts of exclusive property creation to show how hunting practices are part of a process of identity reformation. In the following chapter I present descriptions of comparable practices carried out by ecologists.

Expressions about the undesirability of 'hunting culture' occur due to a combination of some hunters' actions as well as legislative conditions that place hunters in a position where it is difficult to act in ways that are legal. This position of marginality motivates the production of sceptical discourses, thus demonstrating how attitudes towards technological objects can be shaped by the social relationships of their production.

6 Who Cares? Intention, Action and Conservation Ideology

6.1 Introduction

Common among all with whom I have engaged in this study—Ecologists, Managers, Greenies and Hunters—is a love of the outdoors. Both hunters and ecologists describe how they were drawn to hunting or ecology as a 'natural' thing to do, growing from childhood interests and loves:

> Ben [Ecologist]: I've always sort of been, you know, an outdoorsy kind of person, as a kid and everything and […] I just liked learning and ecology just seemed like a pretty good way to be learning and staying outside, and I've always been pretty conservation minded, even as a kid. So, it just kind of seemed natural. [Interview 2009]

> Neil [Hunter]: I was always chasing lizards and shit through the scrub as a kid and […] you know, I ended up getting rifles and we used to go rabbit shooting. I had a dog back then, ah just because I had a dog you know, and I started going hunting and it would just come with me and […] it just led onto pigs. […] I like dogs too, so I thought pig hunting dogs [whistles] just seemed a natural sort of thing to do aye. [Interview 2008]

In the previous chapter I described how through the act of hunting, hunters were immersed within their environment and that the act of killing, and subsequent commemorative practices of photography and trophy collecting, terminated that interaction. The act of hunting evokes emotion—there is a 'rush'. The implementation of baiting technologies reconfigures relationships with the environment as the technology removes, or at the very least limits, the need for human involvement in the process of management and killing. Ecologists support the institution of these technologies that separate and abstract hunters physical relationships with their environment. They do so by engaging logics that conceptually abstracts space (chapter 3), the economy (chapter 4) and animals (chapter 5). However, this group also participates in direct engagements with their environment. Professionally, the practice of fieldwork highlights the entwinement of scientific knowledge and ecologists' emotional attachment to environments.

This chapter focuses on the practice of ecological fieldwork and its role in the simultaneous reproduction of ecological knowledge and ecologists' attachments. Through an analysis of the use of photography by ecological scientists I compare and contrast ecologists' identities, which I characterise as an exogenous identity, with those of hunters. I discuss the emphasis

this group places on a particular idea of purposeful action and argue that it displays a characteristically modern pattern of thought. On the basis of this analysis, I describe contrasting endogenous and exogenous modes of caring for the environment.

6.2 Scientists in the Field

One of the most defining similarities with respect to the ecological scientists of Far North Queensland is that they have all, without exception, moved to this area from other parts of Australia or are from overseas. These individuals have moved to the area for employment, either directly related to the management of feral pigs, or for more general ecological scientific research. The pattern is similar for government managers. All are engaged in the study of the wet tropical environment and all hold this area to be of special significance. While some have moved to this region to make it their permanent home, others stay for only a short period before moving away to further their careers elsewhere. I introduce four ecologists with whom I have engaged, and whose views I represent in this thesis.[45]

Ecologist 1

A PhD student in ecology. Originally from South Australia, this ecologist moved to the Douglas Shire in 2007 and, having recently completed his PhD study has moved out of the district to pursue employment. Prior to university, ecologist 1 served in the military, which included service in Rwanda. Partly informed by his military experience, along with his interest in Buddhism, ecologist 1 is opposed to recreational hunting and has not hunted. He has worked in pest management that has required him to shoot feral animals.

Ecologist 2

Holds a PhD in ecology. Originally from Canberra, this ecologist moved to the Wet Tropics in 1996. Ecologist 2 studied ecology following previous careers that included journalism and taxi-driving and is currently employed in a government research organisation. In response to questions about his hunting experience he stated ‘a long time ago I mildly scared a few bunnies’, he is ambivalent towards hunting but considers that ‘the average hunter’ is irresponsible [Interview 2009].

[45] Because the group of ecologists engaged in feral pig management and who reside in this area is so small, I have chosen not to associate these identifying characteristics with my references to them by pseudonym.

Ecologist 3

Holds a PhD in ecology. Born and raised on a pig farm in South East Queensland, ecologist 3 moved to Far North Queensland in 1991. Ecologist 3 has worked for government departments engaged in natural resource management his entire working life (27 years at the time of interview) and he attained his PhD after moving to north Queensland. Ecologist 3 used to pig hunt but does not any longer stating: 'now [I] do it for a job' [Interview 2008].

Ecologist 4

Holds a PhD in neurobiology. Ecologist 4 lectured in biology in New South Wales before moving to the Daintree in 1988 where he now heads a non-profit research foundation. Ecologist 4 does not hunt and does not think hunting has a place in the wet tropics partly, he says, because it 'lacks professionalism'. Unusually among my informants, ecologist 4 enjoys feral pig meat and will take 'anything we can get our claws on because it's definitely the top meat' [Interview 2008].

6.2.1 Fieldwork practice

> The word ecology is derived from the Greek *oikos*, meaning 'house' or 'place to live'. Literally, ecology is the study of organisms 'at home'. Usually ecology is defined as the study of the relations of organisms or groups of organisms to their environment, or the science of the interrelations between living organisms and their environment (Odum 1971, p. 3).

Over the course of my PhD I spent some time with an ecologist I name Ben, both while I was in the field, during which time I had the opportunity to accompany him as he conducted his own fieldwork, and at the various workshops and other events we attended that related to our shared research umbrella of invasive species management. In comparison to my engagements with hunters that involved my moving through the spaces of the sugarcane and cattle properties, my time with Ben was spent exclusively in the lowland rainforest north of the Daintree River. The lowland rainforest is a quiet place, many of the area's birds are cryptic and the marsupial life is nocturnal.[46] Researchers are occasionally visited, and sometimes chased, by cassowary and, they are quick to point out, they have been caught off guard by hunting dogs. As we moved through this region Ben pointed out a few notable signs of

[46] Within the natural sciences the term cryptic refers to animals adept at avoiding observation or detection.

human habitation and use, an old kettle in a small clearing in the forest and some plastic sheeting left over by past researchers who had not cleaned up after themselves.

While accompanying Ben on fieldwork I noted the quirky objects used in ecological fieldwork that contribute to the production of ecological knowledge. In the context of Ben's ecological research, data were generated with the assistance of aluminium foil barbeque trays bought from the supermarket, hula hoops onto which insect proof netting had been sewn, strings of hand soldered LED lights and, my favourite, 'pig-in-a-box', a device that played pig noises purchased from the online store Amazon.com. The use of such everyday items, to good effect, in the production of science served as a reminder that ecological practice, as with most other academic research, is intimately engaged with the ordinary objects of everyday life. These items were used in conjunction with more specialised instruments, in particular motion sensing cameras that recorded interactions between animals and baits (Plate 29). [Field notes 2009]

Plate 29 Motion sensing camera positioned in the field with handheld PDA uploading data. [2009]

Ben's study was applied research aimed at producing management outcomes. By understanding the drivers of particular (mostly native) non-target species' interactions with bait it was hoped that a baiting regime could be designed to limit non-target impacts thus

assuaging ‘community’ and managers’ concern about the use of 1080 in the WTWHA.[47] The LED lights were placed by bait stations to record the impacts of illumination on bait uptake by small marsupials and native rodents, and the ‘pig-in-the-box’ was used to test the effect of auditory cues both as a repellent of these animals and an attractant for pigs. The hula hoop–insect netting contraptions and the barbeque foil trays were used to collect leaf litter and seed-fall so that the effect of an attractant or repellent could be compared with the food source abundance and other relevant environmental variables.

6.2.2 Fieldwork photographs

Ben considers motion sensing cameras to be one of the most useful recent innovations for field ecology because they allow direct observations of animal behaviour to be recorded. In Ben’s experiments, cameras were utilised to capture images of animals interacting with bait stations. Prior to field cameras being widely affordable and available, inferences on animal activity or interaction with objects had to be made solely on the basis of animal signs such as footprints in sand plots or the presence of dung. Cameras make an assessment of such signs unnecessary (although he did use tracking boards, home-made from items available at a hardware store, to assess rodent abundance). However, as we walked through the forest where the trials were laid out I noticed that, like the hunters I have followed, Ben maintained an awareness of the animal prints and signs around him and as we walked he pointed out dog and cassowary prints.

Cameras allow the ecologist a perceptual closeness to objects of study in a way that could not be achieved previously. Images captured by motion sensing cameras are used in two ways in Ben’s research. In the first way, cameras placed through the rainforest capture images of animals, hopefully pigs, which activate the motion sensor at particular locations. A number of cameras are placed through the forest and left for a set period of time. At the end of this period the photographs are downloaded and data are generated on the basis of the number of photographs of pigs. With the assistance of statistical software, these data are used to generate models of pig activity, and to infer information about their abundance in a given area. In the second way, cameras monitor stations laid with non-toxic baits, constructed in

[47] While this issue persists through the time of writing, anecdotally, I am informed that the findings of this research—that a baiting regime could be implemented without risk to non-target species—has not achieved the desired outcome of having management agencies revise their policies and implement baiting in the area.

order to evaluate the effectiveness of various attractants and repellents: illumination using LED lights and auditory cues using the 'pig-in-the-box'. In these trials the images captured are used to identify the species of animal that has taken bait at these stations.

Scientifically, the value of these images is as they count interactions. Information on species, time of interaction, and other relevant content are gathered from these photographs and entered into spreadsheets to form the data that will be analysed and presented in scientific publication. However, these field images often have a life beyond their use as data. Images captured by field cameras are a feature of the ubiquitous slideshow presentations given by ecologists to their peers. Prominent images are those that provide examples of the interactions being studied—an image of a pig or a wild dog taking up a bait for instance—as well as those that exhibit animal behaviour that ecologists consider to be interesting or unusual. Those whose research budgets allow for motion sensing video cameras often provide the best entertainment. At workshops I have attended in the Australian Capital Territory, Western Australia, New South Wales and South Australia, video recordings of a possum (*Trichosurus spp*) who took up residence in a nesting box set up for the purpose of trapping invasive birds, or a photograph of a 'trap happy' quoll (*Dasyrus spp*) that repeatedly, and seemingly happily, wedged itself into a small tube in which one researcher was attempting to catch reptiles, are notable images that have generated affective responses from their scientific audience, and from me.[48] These images are *cute*. Photographs and videos of animals coexist in these slideshow presentations with photographs of the researcher or their assistant doing fieldwork. Additionally there may be images of the wildlife important to the area—iconic species—whose conservation may have motivated concern about the invasive species in this particular area.

Early in 2008, as I followed Ben through the rainforest setting up trials and collecting data, he suddenly noticed a peripatus had appeared in his hand. Only a few centimetres long and common, although very difficult to find, peripatus is a group that emerged as one of the first land dwelling animals during the Cambrian period approximately 500 million years ago. Information on peripatus can be found on a number of interpretation panels that provide information for visitors and also on the WTMA website (WTMA 2010). Peripatus is one of

[48] A quoll is a carnivorous marsupial found in Australia and Papua New Guinea. They are commonly known as the marsupial cat.

the species that reinforces the area's image, and significance, as a 'window in time' as one WTMA poster states.

Visibly excited, Ben quickly began rustling with his other hand to remove a small digital camera from its pouch around his waist so that he could take a photograph. In the process of groping for his camera, the small invertebrate—which to my eyes was simply a pretty lilac caterpillar—was lost, it fell into the leaf litter and we were unable to relocate it. For Ben, peripatus is 'pretty cool but', when I subsequently asked why, he wrote:

> I dig peripatus because they share features of annelids (segmented worms) and arthropods.[49] Like many of us, they can't decide what category of being they want to fit into. Of course, they're all the more interesting because you don't see them all that often. [Email correspondence 2010]

The ability of Ben to enjoy this fauna of the Wet Tropics was dependent upon his being able to identify the species he encountered within a Linnaean taxonomic schema, a form of knowledge about the world that engages and fascinates professional ecologists and amateur naturalists alike. In the case of peripatus, to know what this creature *is*, as a classificatory anomaly within this schema, made the perceptual engagement both possible and pleasurable. Ben was not unique in his enjoyment in identifying and capturing these creatures on film; among my ecologist PhD peers with whom I spent time at workshops, many possessed high quality photographic equipment. In the down-time at workshops, many PhD students quickly reverted to amateur wildlife photographers collecting the images of wildlife 'native' to a particular location.

6.3 Loving the System

Scientifically speaking, invasive species provide a useful tool for understanding ecological processes 'because you take a system and you insert a new species into it […] and you can use that as a tool for examining the way that the different populations interact' [Ben 2009]. This makes the study of invasive species interesting to ecologists but the species themselves are still generally unwelcome (cf. Brown & Sax 2004, Cassey et al. 2005).

[49] For those who are unfamiliar with the biological science of taxonomy, this is an animal that shares characteristics associated with two different phyla. Annelids, as Ben notes include segmented worms (such as earthworms) while arthropods include spiders, crabs and insects (including butterflies and moths). For a critical commentary on the changing discipline of taxonomy see Yoon (2009).

> Ben: I know it sounds terrible, but you know crocodiles are, have, have for a very, very long time have been part of um, this environment. They're a part of the system. They're a part of the whole, great, interlocking machinery of the environment and system here, whereas pigs are a source of disturbance and destruction to that system, and, I like the system the way it was. I like to preserve the system and keep it operating as it was as much as possible, before we came along and started screwing with it, and pigs are, are a spanner in the works, so to speak, a crocodile is a cog in the system I guess.
> Carla: How do humans fit in the system?
> Ben: Well we're here, and, can't do anything about that. I think we have a responsibility to um, to, not muck it up, anymore than we already are […] but you know, we're part of it, we're here, you can't just sort of extract us from it now, I just think, you know I'd like to see people managing the environment causes as least disruption to it as possible […] it's easier said than done […] it's a complex thing […] the minute you start tinkering with it you can be having all sorts of unintended consequences but you know, tinkering has to be done […].[Interview 2009]

The idea of the 'system' is a core concept used in ecological science and well supported conceptualisation among the ecologists working on feral pig management. At one professional development course I attend, on prominent ecologist argued that it is the defining characteristic of this science [Field notes 2007]. The system concept embedded in the quote from Eugene Odum's classic ecology textbook portrays a holistic and mechanistic way of understanding the environment (Golley 1993, Odum 1971). While earlier concepts of the ecosystem were based upon the notion that they were in, or tended towards, a state of equilibrium, modern ecology has focused upon non-equilibrial ecosystems; systems in flux and subject to surprise and disturbance (Scoones 1999). An interest in the system redefines the focus of concern away from the individual species within an environment to include their inter-relations; the value of the collection as a whole is, as the ecological historian Golley suggests, 'greater than the sum of its parts' (Golley 1993).

Through the 19th century, colonial naturalists were keen to collect 'exotic' natural items discovered as European explorers ventured around the globe. Fauna were collected, stuffed and displayed in private collections and museums, a pursuit that likely contributed to the extinction of some species (Wilson 2004). Plants were collected and displayed in herbaria or grown in botanical gardens. The development of ecology, as it has grown out of the naturalist disciplines of botany and zoology—where collections could be housed and displayed in botanic gardens and herbaria—as it has extended to focus on the interactions and inter-relationships between species, lends conceptual support to the idea that the WTWHA both is, and is needed to be, a 'living museum'.

This focus of concern may be contrasted with that of hunters. Some hunters collect trophy tusks and photographs that predominantly, if not exclusively, comprise photographs of the pigs they have caught. Their object of interest, pigs, leads them to collect numerous tokens of the same item. In contrast, ecologists are expressly focused on collecting a breadth of objects. Like hunters' photographs that compete through magazines, the images produced by these scientists are social ties. However, unlike hunters, fieldwork images serve as a source of collectivisation amongst ecologists; the commonality in emotions these images induce in group settings such as workshops, reinforce this groups' bond and its purpose. Also unlike hunters, for whom photographs are competitive objects, held as private property and that signify a mastery over and separation from nature, ecologists' photographs—both the field images used as data and the photographs taken during fieldwork—serve as a means by which these scientists may get closer to nature in a way that preserves the image of the natural object within its system of inter-relationships. Through these acts, ecologists maintain an exogenous relationship to these natural objects. They attempt to become close to their objects of attachment and maintain a separation as a means of protecting them by capturing them on film. Moreover, in the form of photographs and data, they create a kind of property that enforces a non-exclusive property right with regards the natural environment.

6.3.1 Pigs and the system

There is some debate among the scientists in this area as to the (negative) impacts of pigs on the wet tropical environment. While Ben would 'love to get pigs out of the forest' because of their negative impacts on flora and fauna in the area, specifically to species such as the turtle and the area's endemic ancient plants, another ecologist, John, considers that 'it would be nice to get rid of pigs, but it's just not going to happen. […] I don't believe that pigs are a major ecological issue' [Interview 2009]. Tony held a position somewhere in between that of Ben and John and stated (with some ambivalence) 'pigs don't belong in this ecosystem so yeah take 'im out. […] They're not really that much of a problem except in small areas or where [there are] rare and endangered species and things. […] To the World Heritage Area as a whole they're not a problem' [Interview 2008]. Although ambivalent, when asked the question 'if it were possible to eradicate pigs, would it be desirable?' most ecologists answer in the affirmative.

There is general agreement among these ecologists that eradication of pigs is logistically unfeasible. Furthermore, some, such as Harry remained unsure whether it would be desirable to eradicate pigs even if it were possible. In Harry's view, the local ecosystem may have by now adjusted to the presence of pigs and any extinctions that were likely to result from pig introductions would already have occurred. These scientists' ambivalence about the need to eradicate feral pigs, is consistent with the dominant theory of pest management. Since the early 1990s pest management theory has shifted towards the view that management be directed towards damage control rather than population control of the species (Hone 1994). This theoretical development has been accompanied by an increased focus on mathematical modelling of the relationships between pest density and pest damage—a relationship that is generally not linear.[50] Thus, although these scientists engage in practices that inevitably result in the death of pigs, through this abstraction in reasoning they do not set out with this killing as their stated purpose.

6.4 A Problem of Order: Politics, Purpose and the People Problem

> Tony: A lot of the pig issue goes around in a big bloody circle see, start to reinvent the wheel. [Interview 2008]

This disagreement among scientists as to the extent of pigs' ecological impacts in the region (there remains the impact of pigs on agriculture, where this group generally agrees they have deleterious impacts) has not prevented an extensive amount of pig research from taking place in this area. Indeed, such disagreement based on a lack of scientific evidence promotes the need for further scientific study on these matters among this group. To highlight the extensive focus on this issue, workshops designed to address the feral pig management 'issue' were held in 1999, 2003 and 2008, and focused on the Wet Tropics specifically in 1999 and 2008 and Australia generally in 2003. These were held in rooms on the campus of James Cook University in Cairns with each workshop drawing together extensive networks of related research.

[50] Take, for example the need to control pigs in order to protect turtles. A population control approach would dictate a need to reduce the population within a given area and expect this to have a consequent impact on turtle numbers. However, it is possible that reducing pig populations may not reduce predation on turtles; it may instead only reduce competition among pigs for this foodstuff. If one reframes the problem to focus on reducing predation on turtles, it may not require population reduction in an area but instead the use of barriers and/or highly intensive control in restricted vicinities around turtle eggs at key times of the year.

Scientists and managers, along with many other people in the Wet Tropics, remain frustrated by what they see as a lack of progress in the management of pigs. I was an attendee at the workshop held in 2008 and following this I obtained the evaluations of some of its participants. Responses among the small number of attendees who replied towards the workshop were generally positive however one stood out:

> The same *common* comments kept surfacing time and time again. Unfortunately, these common comments are exactly the same comments that many in the room with previous history on this subject discussed at previous workshops on pigs.
> This points to 'lots of talk' but no actual progress being made [Evaluation form, italics in original, 2008].

The interpersonal politics among the small number of ecologists who are engaged in issues of feral pig management in this area at any given time is acknowledged as being as much of a hindrance to management as the general public. Among this small number of personalities is one described by another as 'extraordinarily emotional', one described as particularly uncompromising and one who described himself, and indeed seemed to be, quite depressed about the impasse over feral pig management as just one of his range of concerns for the current and future state of the environment.

John did not like the way current research was directed:

> John: I have always viewed feral pigs as a pain in the butt, because there's nobody whose just interested in pigs, everyone's got a wheelbarrow or two to push. […] People seem to be engaged with pigs and have an opinion about pigs because they want to get rid of them. […] There seems to be very little just general research on feral pigs and what they do, um, and most of the stuff that I see being done, is really just a political response to things, and I guess that's the main thing. So, I've never seen, it's a crowded area, and I've never really seen opportunities to um, just do good basic research on pigs. [Interview 2009]

As he saw it, John's belief in the value of 'good' science, separated from politics, allowed him to distinguish between his personal convictions regarding the value, or preservation, of certain native species from the course of action prescribed based on the available scientific evidence:

> John: I tend to say well you know, I'll do the research and the answers will fall whichever way they happen to fall. So, even though I have opinions about what […] I'd prefer to see happen, I write up my research the way I find it [...] I actually find that very easy to do [Interview 2009].

Harry, on the other hand, saw a different relationship between science and purposeful action. Harry wished that the community might find common agreement around scientific

understandings of the environment. In his description, Harry employed the concept of resilience—a systems concept:[51]

> Harry: one thing we need more than anything else is mechanisms for developing what we call community resilience and I would love to see it happen, I would do anything I could to see it happen, but I can't see it happening […]
> Carla: community resilience?
> Harry: those people, the basic community such as it is, is well it's [being] prepared to take responsibility for looking after the area […] if you've got a community who does not care for its environment it's not going to be around for very long, I mean, […] simple as that […] and if you're in a community that, that's very very proud of its environment and in fact understands the dynamics of what's happening, […] they have a common purpose and that is going to act as a common linking thing within the community. [Interview 2008]

For John, science could be an apolitical arbitrator, for Harry, a source of common understanding.

6.4.1 Classifying hunting

There are number of different ways people are conceptually incorporated in relation to management planning. John who separated his 'illogical' belief about the eradication of feral animals from the ecological rationale thought that, while pigs were not 'a major ecological issue' it would nevertheless 'be nice to get rid of pigs'. Why? 'because they're a feral animal and we don't like feral animals do we, there's nothing particularly logical about that but ideally, we wouldn't have ferals and invasives at all'. John was engaged in modelling strategies that simulated different management scenarios. In these models he described that 'people are in the model just like pigs are.' John described these models as 'agent based models' where 'agents [are] within the models and they have a whole lot of economic and social constraints and […] drivers for their behaviour, and, just as pigs do, and […] the models are set up to allow us to run different scenarios basically'. [Interview 2009]

[51] Resilience theory, as it has been applied to the linking of social and ecological systems, is a well known branch of interdisciplinary environmental study (see, for example, Berkes, Folkes and Colding 1998). When Harry made these comments I asked if he was a follower of this branch of thought. He said that he was familiar with the work but had not read any of it. Thus, his assertion here was a spontaneous projection of ecological systems thinking onto the social world rather than a reference to socio-ecological systems approaches.

While John inserted human agents into mathematical systems models, in the case of hunting specifically, Tony was explicit to separate 'hunting' from 'management'. For Tony, 'hunting' was what he termed a 'social' issue:

> Carla: what do you think about the use of dogging and hunting in conjunction with trapping […]?
> Tony: you can't dog […] in conjunction with trapping […]. Personally I think that the dogging issue or the hunting issue in the wet tropics is a social issue. People do it because they love to do it and they're brought up with it […] father's and grandfather's been doin' it and they just love to get out in the weekends and do a bit of dogging. [Interview 2008]

Whether they are for or against hunting, non-Aboriginal hunting creates classificatory difficulties for ecologists and managers. In practice, as hunters themselves testify (chapter 4), hunting is a practice that is often 'quasi-management'. In other words, hunting encompasses a diverse set of practices that often overlap categories of what may be deemed 'management' and 'recreation'. Though hunters are comfortable with such ambiguity, ecologists display an apparent need to purify (Latour 1993a) 'hunting' practice into one of two categories. Usually, although not always, this saw non-Aboriginal hunters placed into the category of 'recreation':

> Ben: Hunting […] does have uses for conservation benefits, I mean it can be used to mop up the last few individuals in a population if you're doing an eradication on an island or something like that, it certainly, you know, dogs and things, have been used to, to get animals like that. So, you know there's some situations where it's useful, where it's warranted. […] I mean, I'm not comfortable with the idea of killing for recreation. […] The thing that really shits me about it, is other people, just, bullshit about it, and trying to say that they're doing it for some, for purposes other than just getting their jollies by killing something. [Interview 2009]

The ways scientists and managers assess others (such as hunters) actions, on the basis of the purposes that drive them, are equally the way they assess their own. Specifically, adherents of science appeal to the scientific justification of their actions. Carl (refer 3.2), a Greenie and avid amateur botanist—one who sees the Wet Tropics as Ben did when he saw the peripatus—conducted spotlight shooting on his property as part of his feral pig control program. Carl was adamant that spotlight shooting was not hunting, a practice which he was opposed to. Carl supported spotlight shooting because he supported its 'methodology'. Spotlight shooting was 'management' for Carl while it was hunting for the pig hunters I accompanied on the night I mistook a tree-stump for a feral pig (refer 5.3.1).

Gary, also a self described 'enthusiast' of plants and of biodiversity in general, who 'enjoy[s] getting out there and being in the bush and learning' was not opposed to 'recreational'

hunting, however neither was he comfortable with the thought of hunting in the WTWHA and he was particularly opposed to the idea of pig dogs being allowed in the area. Nevertheless, Gary had difficulty making a definitional distinction between what he thought was 'hunting' as distinct from 'management'. When I asked whether he had ever hunted, he replied:

> Gary: Ah, no [pause] yes and no [pause] I've been involved in trapping programs before. No, not for sport no, for management yes […]
> Carla: [What] type of management?
> Gary: So, I have been involved in […] a recovery program for [an endangered] wallaby before and part of that was trapping and spotlight shooting at night for feral animals. But to me, that was, the motivation was because of a conservation outcome and that was a tool that we [used], and like, I've got no objections to hunting, I actually think that hunting is a valid recreation but I personally don't hunt, I wouldn't want to go out and hunt, it's not something that I do. So no, I don't hunt for sport, but in my job previously I have been involved in feral animal control, which may be defined as hunting, but I wouldn't because to me hunting, you're pursuing it for sport, or for food or for some other reason.
> Carla: Did you enjoy it, your feral animal control?
> Gary: Yeah, yeah, yeah, definitely, it was good. [Interview 2009]

Even where there is acknowledgement, or ambivalence, towards non-Aboriginal hunting in general, the idea of non-Aboriginal hunting taking place in national parks, or the WTWHA, either 'recreationally' or as 'management' is not supported.

Ambivalent opposition to non-Aboriginal hunting introduces a further complication in relation to Aboriginal hunting practices, highlighting the forcefulness of interpretive practice in defining what are deemed appropriate practices within this region. Much of the WTWHA was included under the Native Title determination for Kuku-Yalanji and this determination included a stipulation that secured traditional hunting rights for Aboriginal people (*Walker on behalf of the Eastern Kuku-Yalanji People v State of Queensland [2007] FCA 1907*). Although I have not engaged extensively with Aboriginal hunters in the area, those I have met hunt pigs with dogs and knives in a manner similar to one of the forms of hunting practiced by their non-Aboriginal counterparts. Debate takes place among ecologists and managers as to whether a practice may be deemed 'traditional' where modern technologies have been incorporated or where, as in the case of feral pigs, hunting practice has incorporated 'introduced' animals. In spite of this deliberation, hunting rights for Aboriginal

people are formally secured within the agreements signed between QPWS and traditional land owners.[52]

For Gary, what was relevant in this particular negotiation is which forms of pig hunting may be deemed a 'cultural' activity:

> Gary: I think that, um, for indigenous people, there is a more spiritual element to hunting that relates to their culture, which goes back to resource gathering, getting food but the way that [this occurred] the spiritual, religious, cultural thing, these animals had certain kind of, almost totemic thing […] and [there were] often systems in place for how that was gathered. Whereas I think generally, European motives for hunting are more about sport. [Interview 2009]

Tony, however, who explicitly saw non-Aboriginal pig hunting as a 'social issue', stated that: 'you've got the Aboriginal issue as well, who regard it as food, and hunting animals and all that sort of stuff. Even though [pig hunting is] not officially part of their culture' [Interview 2008]. This attribution of the labelling of a practice as 'cultural' has important legislative implications, for example, with respect to the application of the *Animal Care and Protection Act 2001* (Qld). Although certain clauses of the Act do not apply to non-Aboriginal hunters if the activities deemed feral animal control, Aboriginal hunters are not bound to the Act for reasons of cultural difference. Specifically, Section 8 of this act stipulates that 'This Act does not apply to or affect an act done, or omission made, by—(a) an Aborigine under Aboriginal tradition; or (b) a Torres Strait Islander under Island custom.' (p. 14)

The importance of a recognition of cultural difference, accompanied by a subtext that 'culture' is something that is both functional and spiritual, is a further driver of the ambivalence that is expressed towards non-Aboriginal hunting practice. Without apparent functionality, spirituality or explicit purpose according to scientists and managers, the right to hunt is not deemed to be worthwhile defending. Scholars have noted the ways in which indigenous people, and practices, and their relationships to the environment may be essentialised and romanticised in certain ways (Boglioli 2009, Satterfield 2002) and this occurs among some, though not all, ecologists and managers. What interests me here, however, is how a comparative negotiation of Aboriginal and non-Aboriginal hunting practice reveals something about the self-conceptions of settler descendants particularly with

[52] Although much deliberation takes place by policy makers and scientists as to the legitimacy of pig hunting as a 'traditional' Aboriginal practice, Aboriginal hunting practices regarding 'native' species such as turtles have also been subject to criticism in the region (see, for example, *The Gazette* 2007, Cutler 2007c).

regards what counts as ‘culture’ and who counts as having it. Through a particularly modern way of defining and ordering action—designed to avoid the ontological discomfort associated of definitional ambiguities that arise when deciding what is ‘management’ or ‘recreation’, what is ‘social’ or ‘culture’—an important statement about ‘culture’ is made. Both Gary’s and Tony’s articulations appear to deny the existence of non-Aboriginal ‘culture’ in respect to management issues and, in particular, they deny the existence of forms of spiritual engagement with environments (cf. Trigger & Mulcock 2005).

However, underneath this denial of ‘culture’, ‘management’ may be shown to have a fugitive yet powerful role as a form of ritual practice. The purpose that defines ‘management’ for ecologically motivated actors is the protection of species, not individuals, which are ancient evolutionary beings. Management practice protects ancient beings from extinction and thereby maintains not only a particular biological ordering but also a maximised planetary life according to a calculus of biodiversity. Even though ‘management’ practice does not prevent killing, through the conceptual abstractions of pest management theory it aims to de-emphasise it.

In contrast to hunters’ celebrations of death, then, ‘management’ appears as a ritual practice that celebrates life. But, it is a celebration of life that comes at the expense of the individual. As the imagery of Ben attests, it fixes the exogenous human subject’s existential position as an insignificant one, resting aside the vast and immortal web of relations that is the focus of his protection.

6.5 Can Hunters be Conservationists?

> Neil: I think you got to look at it as a method of control so it’s recognised. It’s not recognised aye, you know, like I see in the paper it’s all traps, traps, traps, traps and never mentions dogging […]. It’s gotta be recognised […] because there’s that many pig hunters up here there’s hundreds of them, they’re all catching pigs […]. [Focus Group 2008]

In previous parts of this thesis (refer, for example, 4.4.4) I have outlined hunters’ expressions of concern for the damage feral pigs’ cause to crops of the farmers for whom they hunt. In their contemporary position within society hunting can only take place within a set of social relationships with landholders on agricultural land. Additionally, within Queensland as the ACPA requires, hunting is technically only legal under the guise of being ‘feral animal

control'. One of the apparent consequences of this is that in hunting media—hunting magazines and pig hunting DVDs—information is often presented to alert the hunting reader (or viewer) to the damage feral pigs are purported to cause, both to the environment and agriculture (see, for examples in the hunting media, Attard 2003, Holden 1994, Magro 2006, Van Der Veen 2008). When asked, hunters are well versed in knowledge about, and express concern for, the damage pigs may cause the environment. The ACPA influences the creation of media to the extent that even close associates who have sent me DVDs of their hunting ensure that such media is clearly labelled 'feral animal control'. As this legislation ensures that such messages circulate through hunting media—that hunting is feral animal control—it appears that it could influence the development of embodied beliefs among hunters, particularly young hunters, as to the value of their activities.

In hunting magazines, one prominent hunting writer has been active in advancing hunters' roles in pest management (Attard 2006). Vic Attard, editor of the magazine *Wild Boar Australia,* advocates that hunters take their children into the bush to hunt so that they might:

> [S]ee what mother nature is with their own eyes and not from a text book. Understanding what feral animals are and what impact they have on our native flora & fauna. (Attard 2009)

Tom, enmeshed in the locally based conflict over the inception of the World Heritage Area, rejects the title of conservationist although he vociferously asserts his concerns about the environment based upon his long term observations:

> Tom: I'm not a really bloody redneck conservationist but I have enjoyed wildlife all my life. When I grew up, you always believed that it was gonna be there tomorrow, however as time has gone on, more land has been cleared, feral animals have increased in number. They destroy nesting areas, they destroy nest sites, they destroy nests and not only of, of cassowaries, they'll eat lizards, frogs, anything they can put in their mouth they'll eat and so there's crocodile nests, everything, they'll just root up steal the eggs […] scrub hen, scrub turkey nests, I've seen them just absolutely ripped open by pigs. Particularly when I was doing tours, you'd go there and there'd be a nice pristine scrub's hen's nest there one day and you'd go back tomorrow and drive past and pull up to show your busload of tourists this mound of soil and debris that the scrubhen has pushed up and it's bloody flat and you have a look at the work around it and you know very well what's done it. [Interview 2007][53]

While Tom explicitly rejected the title that he is a conservationist there are those hunters who do identify as conservationists, or similarly, as with one hunter who described himself as 'a

[53] The orange-footed scrub fowl female, commonly known as a scrubhen, builds large incubator mounds in which they lay eggs. Mounds may be as tall as five metres, and measure 13 metres in diameter. On average mounds are 1-2 metre tall and 6 metres in diameter (Nielsen 1997 p.40).

bit of a green hunter', saying 'I don't like what feral pigs are doing to the environment but I love animals, just love 'em. But rabbits, foxes, cats, feral cats, umm, I've got no time for them.' [Interview 2007]

Both Vic Attard and Tom's description highlight an important difference to that of ecologists and managers, of the way action-in-relation-to-the-environment influences concern. Unlike scientists actions, where 'management' actions are defined following a scientifically mediated process of deliberation, hunters concerns for the environment develop through their actions:

> Steve: we've been going to the same spot for a long time so we're pretty familiar with it. We know the swamps that are wet and the swamps that are dry at the time of the year that we go […] and we don't really shoot for trophies we shoot for numbers so we're doing our bit to eradicate […] we kind of [adopt a] burnt earth policy with them. […] I've seen in the one property that I've been going to the last 11 years, I have seen, just in that short amount of time, how they've changed the environment and the main thing that I see is that they um, because they are rooting up the swamps all the time they're actually lowering the level of those swamps. They're bringing the mud to the surface and making them shallower […] [drying] the swamps that once might have been a permanent swamp. […] Once they dry out a bush fire can run through them and I have seen that with swamps that become dried then they've had bushfires through them and they're virtually barren, […] [they're] finished as a normal swamp. […] I've seen that happen probably two or three swamps in the last 10 years just in that one area. [Interview 2007]

Thus, while Ben may be correct in suggesting that hunters do not hunt for the express purpose of having conservation benefit, it is possible that through the action of hunting, hunters develop concerns for their environment.

6.6 Endogenous and Exogenous Caring

Figure 2 shows the process by which exogenous identities define purposeful action in order to care for, and thus act on, the environment. Figure 3 presents the endogenous form of caring toward the environment as exhibited by hunters. An endogenous form of concern develops through action in relation to the environment.

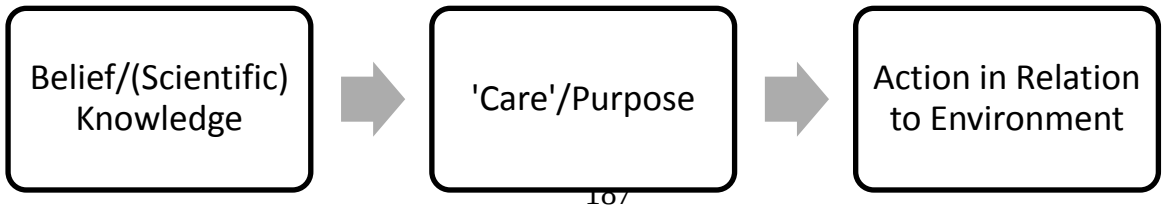


Figure 2 Model of exogenous modes of defining appropriate action

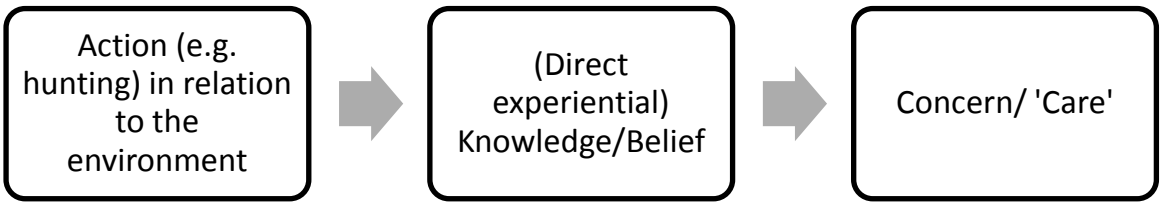


Figure 3 Endogenous way of caring for the environment

This difference in the relationship between action and concern complicates the notion about if, and if so how, environmental management should incorporate different 'values', in terms of concerns for the environment, into management planning. The implication of what I have shown here indicates that management practices, as a form of engagement with the environment, are both directed by and influence the development of affective environmental concerns—the very 'values' on which management may be justified in the first instance.

6.7 Defining Purposeful Action: Management as a Modern Problem

Latour (1993a) describes the modernist constitution that founded the Enlightenment, as it was based upon processes, that in practice combined, but conceptually separated, the world into categories of 'non-humans Nature' and 'humans Culture' according to which there may be corresponding 'facts' (of Nature) and (Cultural) 'values' (Latour 1993a, 2004a). The processes by which ecologists and managers attempt to order non-Aboriginal hunting practice highlights how a number of identical practices may be subject to interpretation into categories of 'culture' (in the case of Aboriginal hunting), 'management' aimed at the preservation of 'nature' (in the case of spotlight shooting) and 'recreation' (in the case of non-Aboriginal hunting). Non-Aboriginal hunting practice does not have a place within this schema, as it is not deemed properly 'cultural' and thus it is not provided conceptual support for its ongoing existence. However, that the terms of the ACPA ensure that hunters must increasingly assert that their practices are aimed at the control of feral animals, it seems likely to become an embodied belief for at least some hunters.

6.8 Conclusion

In contrast to hunters' attachments that build overtime and through a series of direct social and socio-environmental engagements are those whose attachments to this area have developed through scientific knowledge, are pre-ordained and thus spatially detached. Scientific knowledge not only motivates scientific actions on their environment, it has motivated some to move to, and live in, this place. Unlike hunters whose environmental concerns develop *in situ*, ecologists who have not moved to this region, can express their genuine concerns for, and affective attachments to, this region *in absentia*, from rooms in workshops in the Australian Capital Territory or South Australia. This analysis has presented one final point of difference between (endogenous) hunting identities and (exogenous) ecologist identities, and the clusters of related identities that surround them (Greenies and Managers). With respect to property, hunters' engagements in relation to the environment are competitive, and through their engagement they perform an action that creates an exclusive property right. Contrastingly, as Ben's engagement with peripatus highlighted, ecologists' practices in relation to the environment are protective. Fieldwork creates a non-exclusive property right.

7 A Deviant Nature: Cassowaries, Pig Hunters, Pythons and Crocodiles and the Negotiation of Belonging

7.1 Introduction

Pigs, and their management, are one of the region's environmental issues that carry broader divisions between groups through time. For local groups, including local hunters, the relationship between feral pigs and the region's other 'problems', is evident; it is a problem with 'those that do the talking', a reference to the management organisations formally responsible for governance and those who support them. [Interview 2009] However, asking managers and scientists about other regional issues when I have been there expressly to discuss feral pigs and their management, has been greeted with puzzlement and sometimes questions as to 'why the non-pig questions?' This puzzlement reflects, to some extent, the organisational divisions that govern nature and the way that environmental 'problems' are demarcated in preparation for solution. The distinction between 'native' and 'feral' animals is particularly important within management organisations. As one manager said 'we generally don't try and kill our native animals.' [Interview 2009, refer also section 6.3] Outsiders to these processes, however, may have a somewhat different perspective. For some, problem animals are problem animals, whether they are 'native' or 'feral'.

Crocodiles, cassowaries and pythons are some of the native animal 'icons' of Far North Queensland and the Wet Tropics specifically. Images of these animals adorn signs, guidebooks, ecotourism advertisements and interpretation panels across the region. These animals, of economic and symbolic significance, also exist within the conflicts that define this region. In this chapter, I present a series of conflicts relating to each of these animals. In the events I describe, I show how cultural norms of belonging and property have been reproduced in relation to one another and the environment. This reproductive process is both transformative and creative; the social reproduction of cultural norms changes existing norms while bringing new norms into being (Strathern 1992). I show how these disputes, highlighting endogenous and exogenous modes of belonging, contribute to the different oppositional conceptions of environmental stewardship that persist in the region.

I will argue that, in this region, 'native' nature has asserted its agency and thus forces negotiation of cultural beliefs. The case studies I present show how the negotiation of belonging has been reproduced alongside norms of property ownership and of duties of care that encompass the moral agency, and thus culpability, of both humans and animals. Thus, while this chapter serves the purpose of re-contextualising both hunting and feral pigs as part of broader processes of rural transformation in the region, it also serves to address one final 'issue of debate' (Henry 1999)—the debate over whether hunters are 'irresponsible', and deviant, with regards their actions towards native animals.

7.2 Hunters versus Cassowary: Doug versus Carl

The labelling of hunters as 'irresponsible', is linked to concerns that hunters are responsible for the deaths of native animals. This allegation, as with many of the others I describe, persists both locally and nationally (Rhiannon 2006, 2009). Accusations of irresponsibility are strongly predicated on the belief in the right of native animals to reside in the region over those of hunters. To illustrate this point, I return to my interview with Doug and Carl.

The sign outside Carl's property indicates that his land is 'land for wildlife', land over which he has placed a covenant under the *Nature Conservation Act 1992* (Qld). Carl has transferred his property rights onto nature and he assists 'native' nature through restoration activities that repatriate native species and by controlling feral pigs and shooting dogs that come onto this property. Carl considered that hunters were more of a threat to cassowary than pigs:

> Carl: we have several incidents unfortunately anecdotally, we don't have enough evidence to um have people charged, but with pig hunters having shot cassowaries because they were disrupting the hunt. The dogs were chasing cassowaries and so they shot the bird and then the dogs went back to hunting pigs which is what they wanted them to do. [Interview 2007]

Carl's position echoed the scientific position, which is also the government management position, on hunting and the cassowary—hunters and their dogs present a greater threat to cassowaries than do feral pigs (QPWS 2002).

The cassowary forms part of the corporate logo for the Wet Tropics Management Authority (Plate 30). The cassowary is described in interpretive material as a 'relic' and a 'keystone species', a species that is the sole seed distributor of a number of important rainforest species (WTMA 2002). This species is classified by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species™ as 'Vulnerable' although it is suggested that with further information on populations of this species, located in New Guinea, the southern cassowary may be better classified under the less serious category, as 'Near Threatened'. In Australia, however, the *Casuarius casuarius johnsonii* (the debated sub-specific classification distinguishing Australian cassowary from their New Guinean counterparts) is classified as 'Endangered' (*Nature Conservation (Wildlife) Regulation 2006* (Qld)). Scientific population estimates suggest that only 1500–2500 remain in the Wet Tropics of Far North Queensland (QPWS 2002). Cassowaries are known to be grumpy on occasion and have a powerful kick which could be fatal to a human. Government staff work to educate the public not to approach or feed these animals for fear there may be an accident.

Plate 30 Cassowary statue greets visitors at the Daintree ferry terminal [2009].

Although the cassowary is an explicitly appointed symbol of the Wet Tropics (see, for example, Nielsen 1997) not everyone finds this bird an intrinsically interesting or important

species. The cassowary as a 'symbol' of the Wet Tropics is, for Locals, local hunters, and hunters alike, a symbol of the contested 'Green' Wet Tropics:

> Doug: all the people that are saving the cassowary, all the cassowary savers, […] they're the ones that won't let the dogs into the national park because they [think they're] a danger to cassowary you see […] but I don't think you'd catch too many. […] [T]here's plenty of cassowaries out there anyway. […] The game they play counting them that's all crap. [Interview 2007]

Among hunters, aware of these criticisms levelled against them, are those who describe the opposition to what they do with reference to these others' concerns about the potential impacts of hunters to cassowary. That hunters tend to refute comments they harm cassowary makes curious a conversation I had with one such hunter on this subject. During late 2007, as I was interviewing a hunter careful to distinguish himself as one of the 'good' hunters, in contrast to those other hunters that are 'irresponsible', I was told an unusual story. The story was basically this: irresponsible hunters' dogs had caught a cassowary and killed it. The hunters dismembered the bird and placed it in a rubbish bin in the tourist area of Mission Beach. The hunter I spoke with was incredulous at both the actions of killing the cassowary and of the hunters' stupidity, in his view, of disposing of it in such a public way. Curious as to the details of this event I attempted to verify it—with no luck. I cannot say, therefore, whether or not this event really happened. Regardless, in its retelling, particularly to me, the story was an important symbolic commentary of hunters feelings towards the 'Green' Wet Tropics and the conflict between hunters and 'native' nature.

Hunters that engage in these dialogues, whilst making clear that they do not wish to harm any 'native' animals (refer, for example, 5.3.2), nevertheless suggest, as Doug did, that these native animals are inherently robust and thus able to tolerate some degree of disturbance. In this view nature is seen as a competitor. As Doug's friend Simon stated: 'people think we want to kill everything but it takes a lot of work to keep things [both rainforest and pigs] out.' [Interview 2007]

7.3 Crocodiles and Pythons: Two Further Animal Icons of Far North Queensland

As it had happened, my interview with Doug and Carl took place early on in my 'proper' fieldwork. On advice from one of my supervisors one of the first things I had done when I arrived in Mossman was obtain a copy of the local newspaper, *The Port Douglas and Mossman Gazette*. The front-page article of this newspaper was as follows:

What a whopper

Lucky cat's slippery escape from 4m python

BRUCE CUTLER
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A PORT Douglas puss living the good life among luxury hilltop mansions needed all his nine lives and the strong golf swing of his elderly owner when a 4.1m visitor arrived unexpectedly for dinner.

Matty the cat might be named after the North Qld Cowboys rugby league speedster Matt Bowen, but he couldn't perform the slippery acts of his namesake when a hungry python found him napping at his Flagstaff Hill property.

Flagstaff Hill, overlooking the Port Douglas town centre, is usually a quiet enclave of luxurious executive retreats and award-winning villas.

But on Tuesday night it became the domain of deathly cat howls, loud cursing and the repeated thumping of a one-wood golf club used to attempt to free four-year-old Matty from the carpet python's death squeeze.

Matty's owner and property caretaker Marshall Gadd said he was awoken by the sound of his precious puss yowling in terror at about 3am, and raced down the stairs.

On switching on the lounge room lights, Mr Gadd saw a huge serpent behind the TV cabinet, its body tightly coiled around the body of his favourite feline.

"The cat's eyes were nearly popping out of its head," he said.

continued page 2

Unwanted visitor: Marshall Gadd with the broken golf club he used to force a 4.1m carpet python to let go of his beloved cat, Matty.
Lucky survivor: Matty recovers after his brush with death.

Photos by BRUCE CUTLER

Plate 31 Front-page article of *The Port Douglas and Mossman Gazette*, 18 October, 2007.

I had saved the clipping thinking that it might provide interesting context although I was not too sure how or why. At this early stage in fieldwork I had not thought to ask too many of my interviewees questions on the topic, although it came up spontaneously from time to time. Carl was one who mentioned the article briefly. Carl stated: 'well all of us were offended by that python [displayed on the front page of the newspaper]. I mean a beautiful amythestine python gets totalled because of a fucking cat. You going to raise that later?' [Interview 2007]

This article (Plate 31) outlined how Port Douglas resident Marshall Gadd had been awoken one night by the howls of his cat Matty. Investigating the situation, Gadd found that his cat was being suffocated by a four metre long carpet python (*Morelia spp*), a common species, that had entered his home. The newspaper article quoted Gadd saying 'I couldn't see my cat crushed to death. I didn't want to hurt the snake but I had to do something.' Using a golf club as a weapon, Gadd bludgeoned the snake, snapping the golf club, until the snake released the cat. Gadd's blows were not fatal and after recovering from this assault the snake threatened to attack again. Retrieving another golf club, Gadd finally succeeded in killing the snake. The article concluded by reiterating Gadd's concern for the welfare of the python stating: 'The change in golfing club eventually stilled the 20kg reptile, which Mr Gadd is at pains to point out he regrets.' (Cutler 2007b) The following day, *The Cairns Post* published its own version of the story titled: 'Python bludgeoned to death to save family cat.' (*The Cairns Post* 2007a)

Articles such as this are not particularly exceptional in the region; items on pythons threatening and/or eating domestic pets and those that document instances of pythons having been purposefully and publicly killed by people, were a common feature in these Far North Queensland newspapers throughout my fieldwork (*The Cairns Post* 2007a, 2007d, 2007e, 2007f, 2008, 2008a, 2008b). This story was, however, particularly controversial and the following few weeks saw the letters to the editor column, and the 'Txt post' section, saturated with this subject as individuals variably condemned and condoned Mr Gadd's actions, whilst simultaneously negotiating the relative value of the domestic, though exotic, cat versus the wild and native python.

Those condemning Gadd's actions wrote:

> This [python] is a native and protected species that got brutally bashed to death over an introduced feral species […] you can't just kill a beautiful, harmless animal. (Claydon 2007)
> To the idiot at port who killed the python. R parks and wildlife going 2 press charges. (George 2007)
> Maybe, the same respect should be shown to the wildlife that belongs to us all. (Bevan 2007)

For every letter that condemned Gadd's actions there appeared a message that condoned, or at least vindicated, his actions:

> Killing a snake that is endangering a loved one is an honerable act. What if it was someones kid. Would u still complain. Grow up ppl. (Den 2007)

> So […] you would have stood around and watched while your pet and companion was smothered and devoured by the python. Hope your husband/partner is careful. […] Let's not forget the pleasure and devotion we get from our pets. (J. Smith 2007)
> On the dead python in Port. Marshall had no choice. I have exterminated many big snakes that try and swallow my animals. My property … big mistake (Michelle 2007).
> Michelle, kuranda, the snake is in its territory so u get out of it instead and do kuranda a favour. (Mick 2007)

As the snake debate persisted through the news media in both Cairns and Mossman, another native reptile was beginning to cause trouble. Saltwater crocodiles (*Crocodylus porosus*) were taking up residence in the waterways of suburban Cairns and another debate was raging as to what should be done with these animals. Some expressed concern for human safety and called for their removal (*The Cairns Post* 2007b, 2007c). Echoing the sentiments expressed about the cat and the python, the debate over crocodiles persisted between those who asserted that crocodiles had a legitimacy to reside in these areas by virtue of their autochthony relative to humans:

> We have to remember that we are in their backyard […] we have to respect crocodiles, they have to live somewhere (Your Say 2007).
> Crocs were here well before us (Paul 2007).

On the other hand, there were those in favour of removing crocodiles from suburban spaces highlighting the risk these animals posed to humans (Your Say 2007).

Less than two weeks after the incident between the python and Matty the cat, following a number of articles on the matter of crocodiles, came this article, on the front page of *The Cairns Post*:

Boys admit bashing 1.8m saltie to death

Police investigating and may lay charges

CROC HUNT

Got him: David Stallwood and Henry Tabuar say they killed the croc because of safety fears.

'We got a hook, some meat and we got it'

TWO boys have admitted taking revenge on a crocodile lurking near their Cairns home, hooking it and bashing it to death with a rock.

Police and wildlife officials are investigating the attack on the 1.8m croc in a drain at Dillon St, Westcourt, and have warned the boys may face hefty fines.

But residents last night defended the boys' actions, saying they were fed up with the number of croc sightings in suburban

Sophia Browne
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Added his mate Henry Tabuar, 14: "We just wanted to get it out for the safety of the people."

Queensland Parks and Wildlife Service conservation services manager Dr Mark Read said the croc was the same animal spotted in the Dillon St drain on Sunday.

He said he would work with police today

TXT US

TELL US WHAT YOU THINK ABOUT CROCS IN THE SUBURBS

Plate 32 Front Page story the Cairns Post 30 October 2007. The caption under the photograph of the boys reads 'Got him: David Stallwood and Henry Tabuar say they killed the croc because of safety fears.'

As the headline states, two teenage boys admitted killing a 1.8 metre long crocodile that was living in a suburban drain in the city of Cairns. In this article, the boys described how they lured the crocodile with meat before bludgeoning it to death with a rock stating that their concern about public safety had motivated them to dispose of this creature. The flurry of responses to this newspaper event quickly divided along two distinct avenues. On the one side were those who condemned the killing of an 'innocent' and 'vulnerable' crocodile (McNamara 2007a), condemnation that included some questioning of the boys' psychological state:

> Somebody better offer these croc-killing boys some counselling. Children who can bludgeon an animal to death often have severe psychological issues that need attention (S. McDonald 2007).
> Innocent Croc. Thumbs Down da boyz 4 killing croc. Shame on youz. Da boyz should be fined (Anthony 2007).

But equally, there were those who exalted the boys for their 'heroic' actions:

> Why do we have to wait 4 a croc to kill someone b4 we do anything about it? These boys have worked proactively 4 their neighbourhood (Matt 2007).

> 2...the “save the croc do-gooders” r u waitin 4 a child 2 b atakd b4 u kill the croc ... gud on the 2 brave boys (Liz 2007).
> Cairns is not a crocodile habitat: it is a thriving international destination with a population of more than 100,000. Cairns may have been a crocodile habitat 100 years ago but not anymore and I am tired of people saying we are living in their territory. Clearly, it is the other way around (Wollin 2007).

In both the python and crocodile incidents, on both sides of the divide, questions were asked of the Queensland Government’s management authorities—were they going to press charges and/or ensure that these animals were removed before individuals took matters into their own hands?

The death of the crocodile prompted a swift official response. Within 24 hours, a media release was sent from the office of Andrew McNamara, the Queensland Government Minister for the Environment stating:

> My agency has the job of balancing the management of crocodiles, which have been inhabiting our waters for millions of years, with the safety of people who yearly encroach further into crocodile habitat.
>
> At the outset, let me make it clear: the Queensland Parks and Wildlife Service has public safety as its number one priority in managing crocodiles. […] Crocodiles are an important part of Queensland’s ecosystem, contributing to the health of Queensland’s environment as well as its economy (McNamara 2007a).

McNamara instigated a review of legislation that, among other things, heralded a discursive transformation for crocodiles from ‘problem’ crocodiles to ‘estuarine’ crocodiles with the revised *Nature Conservation (Estuarine Crocodile) Conservation Plan, 2008* (Qld) enacted in March 2008 to replace the *Nature Conservation (Problem Crocodiles) Conservation Plan 1995* (Qld). The revised Act stipulated that all crocodiles over two metres in length residing in populated areas would be relocated, either to other de-populated areas or to commercial crocodile farms or wildlife parks. This legislation also made it illegal for a person to be within ten metres of a crocodile without ‘a reasonable excuse’ (s 3, p. 8).

Estuarine crocodiles were protected by law in 1974 (*Fauna Conservation Act 1974* (Qld)), at which time this species had been hunted to near extinction. Professional crocodile hunters, respected and admired within society for their occupation at the time (one individual described crocodile hunters, positively, as being ‘like bank managers today’), had all but wiped these animals out. During the 1950s and through until at least the 1970s, my reports suggest the Daintree River was devoid of the species. The Daintree River was used by

recreational water-skiers, and graziers would swim cattle, and themselves on horseback, back and forth across the river as necessary. With the cessation of crocodile hunting activities, the (wild) crocodile's resource value has been transformed from being based on the value of its hide to an object of ecotourism value and crocodile spotting ecotourism ventures are a common presence in the area (Plate 33). From near extirpation, and in conflict to scientific reports that conclude that crocodile populations remain static (QPWS 2007), local residents see increasing numbers of crocodiles encroaching into suburban areas each year.

Plate 33 One of the stalls at the Daintree ferry terminal offering crocodile spotting tours [2009].

Criticisms levelled at scientific population estimates for crocodiles are similar to those levelled at scientists' estimates for feral pigs (and further to Doug's comments on the estimates of cassowary populations):

> Ed: The checks on the [crocodile] numbers have always been done on the estuaries and they say that the numbers are either declining or remaining static. There wouldn't be a property owner who didn't say that was absolute baloney because what I'm saying here is a certain amount will live there and the bull, the dominant bull croc will chase the others, so they've gotta go out. Now […] everytime they've done the numbers they've done the estuaries and of course their numbers remain static, they don't build up because they're like cows in a paddock and only so many can eat there. [Interview 2008]

> Tom: it's just unbelievable, the growth in numbers [of pigs]. They have, they can give you all the estimations they like of how many pigs there is, say this area here—
> John: no way in the world they bloody know

> Jim: no, no way
> John: like they look at this little, say they went across a cow paddock across the river there somewhere and they say two mile radius. They say righteo that's how many pigs, so they put that over for […] for the whole national parks. I mean that's a load of crap. [Focus Group 2008]

In February 2009, tragedy struck when a five-year old boy was killed and eaten by a crocodile in the Daintree River. Following this tragedy, the 4.3 metre crocodile suspected of killing the boy was captured and x-rayed to reveal the remains of a young child in its stomach. The family of the boy did not wish for the animal to be destroyed and it was subsequently removed to a commercial crocodile farm (ABC News 2009b).

When I arrived for my final fieldtrip in May 2009, rumours were still circulating as to the circumstances that surrounded the boy's death. As was becoming commonplace, yet another crocodile had taken up residence locally, this time in a man-made lake in a residential subdivision in Port Douglas. QPWS was attempting to trap the animal and had cordoned off the boardwalk that surrounded the lake in the meantime. Local residents made remarks that their habits and practices were changing in response to crocodiles that were encroaching on areas they had previously used for recreation, particularly swimming and fishing areas. Some made suggestions that crocodiles in particular areas might have been, or in the future be, 'dealt with' quietly by individuals.

The ecologists I was interviewing remained unwavering in their support for their crocodilian cohabitants. One argument that had gained traction among those supportive of crocodiles compared the treatment of crocodiles that killed humans with motor vehicle accidents caused by human drivers. John stated for example:

> There are a lot more children who get killed by cars, we don't go around shooting motorists and blowing up cars, um, what we do, is we train kids how to live with, with the cars, it's exactly the same as crocodiles [Interview 2009].

Crocodiles and pythons deemed 'problems' under the law are currently trapped and removed to wildlife parks and commercial farms. Crocodiles that are removed to wildlife parks are not killed, however they may be used to breed young that are raised and culled for leather, for which a market still exists, in the same manner as other production animals. With crocodile farming replacing hunting as the source of crocodile leather, farms in the area mix their

production activities with crocodile tours that explicitly link farming with crocodile conservation. Crocodile farming, it is said, is the best means of conserving the species.

7.4 Nature's Rights

These conflicts contested the norm that native nature should maintain a privileged status by virtue of their autochthonous belonging. Disputations over the belonging of native nature, were mixed with contested understandings of property. Present were both ideas of nature as 'belonging to' an area as well as nature being a 'belonging of' society. Specifically, public support for autochthonous nature's right to reside in these regions was coupled with an assertion of a non-exclusive property right over nature ('the wildlife that belongs to us all'). The opposing side did not question the autochthony or 'nativeness' of these creatures or the intrinsic value afforded to species of this category. Rather, these individuals prioritised the right of the (human) persons involved to establish and maintain their property rights, to protect property that belonged to them and affording them the right to demarcate a boundary around their human and non-human loved ones. This latter view was, as Marilyn Strathern describes, one where '[o]wnership […] curtails relations between persons; owners exclude those who do not belong' (Strathern 1996, p. 524). Through the assertion of property right, human belonging-in-place may be declared.

The question of whether nature conservation legislation constitutes natural objects as being the property of the State has been debated in court, where it was found that 'wild' animals cannot be considered in this way (*Yanner v Eaton [1999] HCA 53*). Protective legislation such as the *Nature Conservation (Estuarine Crocodiles) Act, 2008* (Qld) and the ability to divest property rights to wildlife through the *Nature Conservation Act 1992* (Qld) appears to extend native nature—crocodiles, cassowaries and pythons—rights as 'persons' within the State. The cultural norm that ascribes privilege to those things that belong is supported in the discourses of managers and scientists and in the regulations of nature I have described.

Accompanying this legislative protection for native animals, predatory reptiles such as crocodiles and pythons, were characterised as 'vulnerable' and 'innocent', fragile subjects of the law that *needed* to have their rights protected. As recent events highlight, however, this 'native' nature is anything but benign; it can exercise its agency and be dangerous, even fatal,

to human beings. Within this quasi-judicial negotiation that has extended personhood to these animals, killing an animal has been delegitimized and the ‘death penalty’ has become unjustifiable punishment. Crocodiles, as with pythons that threaten or eat domestic pets, are subject to incarceration—they may be removed from the wild to be displayed in wildlife parks.

These actions however, highlight the important role interpretation has in ensuring these cultural values may be upheld. The case of crocodiles that are deemed ‘problems’ and removed to animal penitentiaries, where they may be conceptually reappraised as production animals and thus human property that may be slaughtered, highlights a contradictory consequence of this process: The unavoidable deaths that society demands continue to take place, and (much like the practice of pig trapping or spotlight shooting) are made acceptable through a resource intensive process of physical relocation that allows for the necessary symbolic reinterpretation.

7.5 Modes of Governance: Protectors versus Competitors

These events highlight important differences in exogenous and endogenous modes of environmental relationship at the basis of disputed governance in the region. Specifically, that of protection versus competition. On the one hand are those exogenous identities that see themselves as protectors of native nature, and have worked to extend legal and property rights to this fragile entity. These groups seek to be close to nature, however, their activities towards it are motivated from a pre-conceived vantage of separation and authority. On the other hand, are those endogenous identities who exist in an inherently competitive relationship with their surroundings always seeking an advantage from a position that does not presuppose authority. In their practices, both identities exist in a process by which they strive to either create, or overcome, hierarchies.

For the exogenous identities, such as Carl, nature is brought close to home; Carl’s property is a microcosm of the WTWHA that surrounds him. Carl’s dwelling starts to resemble an extraneous appendage to the native nature on this land for wildlife and he appears comfortable with that. Endogenous identities, such as Doug, do not assume they exist in hierarchy to a vulnerable nature, but instead are in competition with it. Doug defends his right

to property and his property reflects this ownership visually through the sharp discontinuity of his property in relation to the adjacent WTWHA. With the exogenous view ascendent and with non-exclusive property rights in relation to nature mixing with a transferral of property right to nature as a (legal) person, direct engagements between humans as killers and animals, are further delegitimized—animal killing of humans becomes acceptable while human killing of (wild) animals is made deviant.

7.6 Conclusion

This chapter has served two purposes: The first was to elucidate a final issue of debate, the claim that hunters are 'irresponsible' with respect to native nature; its second purpose was to recontextualise the specific issue of feral pig management (and hunting) within the wider disputations that have beset this area through 30 years of transformation. In so doing, I intended to highlight that in many respects specific pig management issues equally flow through numerous other debates, feeding local discontent against management authorities and proliferating scepticism towards scientific knowledge in general.

I have shown how two norms of belonging, that position a subject in relation to place and the environment, have been engaged. An idea of belonging as a right by virtue of autochthony exists in contrast to one that connotes ideas of property ownership through which belonging may be asserted have been conjoined through this debate. These depict conflicting endogenous and exogenous understandings of what it is to belong in relation to place and the environment as it informs ideas of appropriate governance. Over the course of 30 years of disputation two models of environmental relationships have persisted. There are those who are protectors and those who are competitors. Protectionism of vulnerable nature dominates in both law and policy and within this context, the competitive practices of hunters and other endogenous identities who seek to create, and defend, human property in relation to what they consider a robust nature, have been made deviant.

8 Conclusions

This study, of factors affecting feral pig management in the Wet Tropics of Far North Queensland, afforded an opportunity to study an interesting problem in an interesting place. In this thesis I have sought to examine the conflicts articulated in disputes over feral pig management as they are situated within a number of the region's broader environmentally based debates. Additionally, I was searching for a sociocultural explanation of a specific action: hunters' purported vandalism of a feral pig trap. Motivated to explore these issues I have sought out the answer to three specific questions: (1) What factors influence the adoption of technological products and strategies that may be useful in improving environmental management outcomes? (2) How, when, and why does 'hunting' sit within, or apart from, the landscape of 'management'? and (3) What makes hunting an unacceptable activity within the national parks of Australia?

The typologies of endogenous and exogenous identities have proved to be particularly useful in understanding the conflicts that impede management collaboration in the region. In particular, they help to elucidate how the production of certain identities influences the adoption of scientific and non-scientific strategies of pig control. Moreover, by illuminating how identities are produced through clusters of overlapping identities that determine the transmission of discourse, this study presents a model to explain how inherently mutable identities and practices, and the malleable meanings of technologies, become fixed in entrenched opposition.

8.1 Reflections on Multi-Sited Ethnography

In the pursuit of my research aims I spent a number of Saturday mornings at the Mossman farmers' market drinking coffee for A$1 at the Country Women's Association (CWA) booth. On each return visit I would go there and meet old acquaintances and make new ones, catch up on salient issues for local people and pass the time of day. During my time in Mossman I lived in one of the local pubs. I interacted with fellow guests and occasionally had a beer at the bar. At the pub, I would often sit to write my notes at a table on the large verandah that surrounded this building. Sometimes, the publicans' pre-school aged children would come and sit with me and we would play cards. When there were no other residents at the pub, and the rooms were open for airing, we played hide-and-seek. I conducted interviews with the

area's government managers that included frequent trips to Cairns and I interviewed and conversed with as many pig hunters as I could find. Eventually, I was able to go hunting. I bought a swag (Plate 35) and, after some initial adjustment, I came to thoroughly enjoy my trapping, hunting and camping experiences. I was sad that I could not have done more but these are activities I will continue to participate in as opportunity dictates.

In between my time in Mossman I was fortunate enough to be flown around Australia to attend various workshops, conferences and functions that usually incorporated the viewing of the resident native wildlife (Echidna in Kangaroo Island and Bilby (Plate 34) at a wildlife sanctuary in Western Australia remain the most memorable); here, I would socialise with fellow PhD students and professional scientists in the evening over wine and beer. In Brisbane, fieldwork materialised at the supermarket, where environmental NGO booths' displayed fundraising material, through politicised postings that appeared on my facebook page, and in the hunting web fora I participated in. Occasionally I would send and receive emails to and from acquaintances that I have made throughout Australia.

I chose not to spend the traditional year in one physically demarcated field site, instead I traversed numerous networks and visited multiple sites that contribute to the production of management and the space of the WTWHA. Within each of these settings, the views that people expressed made sense to me. The views they expressed about others did not. I have, at times, found the negative judgements that one group of participants' makes of another quite distressing. Moving between Hunters that hunt the sugarcane paddocks surrounding Mossman and Ecologists that present their research in conference rooms in the nation's capital has been a blessing in some ways and a curse in others. Constantly moving between these groups has ensured I am continually challenged to adopt a position on neither 'side'—a position that is equally critical, fair and compassionate to both groups. At times, however, this position has been a lonely one; unable and unwilling to 'side' with one or other faction, it seems that my position has sometimes been unsatisfactory for all.

At each location, physical or virtual, I attempted to take in as much context as I could and this included the collection and review of texts and media. One of the key outcomes of such an approach was the enormous volume of data it generated that thus created certain logistic issues. I consider that policy, academic and legislative texts are meaningful operators. These

texts carry ideas across space and time and they solidify social ties. Such sources are thus highly relevant 'data' in a study of management. Moreover, I agree with Melhuus (2002) that media are particularly valuable sources for multi-sited ethnography. My use of textual information has created a difficulty because presenting textual information in conjunction with verbal data means that results cannot be conveyed quantitatively. Without wanting to separate these kinds of sources, or presuppose a hierarchy of human and non-human sources of information, I have been unable to find a way to make quantified assertions on the basis of my study. This complicates ethnographic writing when one wishes to present and justify certain generalisations but, furthermore, it is a barrier when attempting to engage critically with ecological scientists who have tended to have firm commitments to the value of random sampling methodologies and quantitative data.

It is clear to me that studies of management, and thorough ethnography in general, should pay attention to the media and texts that are relevant to the subject matter of study. Moreover, for multi-sited ethnography this is a practical necessity. Finding ways of synthesising textual and verbal data in ways that are convincing within the interdisciplinary contexts I wish to engage remains a challenge for the future.

Plate 34 Bilby (*Macrotis spp*) photographed under infra-red light while attending an invasive animal related program review in Western Australia. The Bilby is a marsupial related to the bandicoot. The IUCN classification has it listed as vulnerable, however, it is a population thought to be in decline. This photograph was taken at a captive breeding centre [2007].

Plate 35 Author's swag laid out under a tree during a pig hunting and camping trip [2009].

8.2 Endogenous and Exogenous Identities

Through this thesis I have recognised and endeavoured to characterise two broad kinds of identity. For these I adopted the labels of endogenous and exogenous because they express how these identities exist as processes constituted through a series of networked relations. Observing the cautions offered by Brosius (1999) and Tsing (2005), these identities have explicitly not been defined in terms of cultural models of nature, nor cultural logics that determine action. Instead, building on Ingold's (1993) typology, I propose these identities as two existential positions of the self in relation to its environment and seek to identify what actions become appropriate according to each mode of conceptual, and physical, situation. This analytic focus is in line with studies that understand 'culture' as the result of intentional and active processes, rather than as its cause.

These identity types are externally, rather than self, defined classifications. Instead of ascribing individuals as possessing multi-layered identities I consider that multiple identities exist in overlap between persons. The reproduction of these oppositional identities appears to be dependent on a supporting network of related identities that reinforce discourse and reproduce similarities with others as much as they are dependent on reproducing distinctions between others. This was particularly apparent in the conversations with Doug and Carl

(chapter 3) whose stated differences, based on nuanced discursive variation, were in actuality quite subtle.

Building on the theories developed by Timothy Ingold (1993, 1996) and Bruno Latour (1993a, 2004a), as well as taking account of the critiques of these theories (see, for example, Boglioli 2009, Carrier 2003, Strathern 1996), I have identified knowledge as a key factor influencing identities. In general, I suggest that endogenous identities privilege knowledge derived from direct engagement while exogenous identities privilege (abstract) scientific forms of knowledge. Numerous comparable studies have highlighted how divisions between individuals who ascribe to 'abstract' versus 'common-sense' forms of knowledge are implicated in environmental disputes (see, for example, Dunk 1994, Robbins 2006). Here, I have shown not only that these different forms of knowledge shape identities and inform this dispute, but also how, why and therefore what might be done differently to improve management outcomes.

Both scientific knowledge and knowledge that is derived from direct engagement with an environment exist within, and shape, different social relationships. A strong belief in scientific knowledge binds a diverse group of identities together across a number of issues. For this group in particular, texts, including policy documents, serve as social ties (Latour 1993b). These scientifically informed identities, whether locally resident or not, exist exogenously with respect to the local space. Greenies, Scientists and Managers (and animal welfare groups as well) form an overlapping cluster of exogenous identities with respect to the 'management' of feral pigs and the WTWHA more generally.

Scientific knowledge determines the marketed value of this region as well as purposes and definitions for the intentional acts of caring in which members of the exogenous group participate. Scientific knowledge mediates affective attachments and acts of caring in the ways I outlined in Figure 2 (cf. Carrier 2003, Milton 2002). Exogenous identities, while having direct experiential engagement that is both meaningful and pleasurable, do so through the distinctively abstract and universal concepts brought in from academia. As a consequence of this, exogenous identities can express legitimate concerns for the region *in absentia*. Conceptualising the WTWHA region as a universal Euclidean space, bioregion or landscape, leads this group to contest the endogenous cultural norm that defends exclusive property

rights and the notion of a one-to-one relationship between ownership of, and responsibility for, property. Ecologists consume and exercise a non-exclusive property right over nature through photography whilst resident Greenies extend legal personhood and property right specifically to native nature. These forms of protection or preemption exhibit Ingold's (1993) observation that environmentalism 'signals the culmination of a process of separation' (p. 31). Whether protecting a 'vulnerable' and 'innocent' nature or applying scientific and technological innovations to improve animal welfare, these actions presuppose that exogenous identities exist in a hierarchical relationship to the natural environment.

I present the contrasting cluster of endogenous identities—Locals, non-scientific adhering local residents and Hunters—as being defined through direct social and socio-environmental relationships and exhibiting subject-centred patterns of thought and thus intimately tied to the reproduction of the Local. As with Latour's (1993a) depiction of non-moderns, these identities dwell within closely bounded hybrid networks. I have presented evidence of the mediated networks through which endogenous identities consume and reproduce discourse (pig hunting magazines are the most notable but web for a also exist) however these networks are far more limited in scope than those of their exogenous counterparts. Specifically, they are shown to be competitive rather than collaborative networks. As I showed in Figure 3, the endogenous identity may be characterised as an identity in which both knowledge and affective attachments are built over time derived through direct engagements with specific locations. Growing from within and, without a preconceived vantage of authority, these competitive identities seek to become superior. Through this relationship between humans and an environment that has been imbued with agency, these local dwellers seek to accrue and maintain exclusive property rights: they create gardens and crops that are free of rainforest species, keep birds that are contained in cages or they collect pig tusks to display.

Both the exogenous and endogenous identity types I present display that they are engaged in processes of becoming. For exogenous identities, this means overcoming the hierarchy and separation between themselves and their environment by drawing nature closer both legally (in the ascription of 'personhood' and property right) and physically (as in the case of physical dwellings). For endogenous identities, this means an ongoing competitive struggle between human and their environment to move nature away. Thus, we see that both identity types appear to exist in a somewhat unhappy, and unstable, relationship with the

environments with which they interact. Moreover, each identity type appears as if it is trying to become the other. In spite of this apparent movement towards one another, the processes by which these identities are reproduced do not lead to syncretism nor equilibrium. Again, here, it can be seen how scientific and non-scientific knowledge and technologies intervene to exert influence on the transformation of identities-in-relation-to-environments. Hunting technologies and practices reproduce endogenous identities, while baiting technologies exhibit a trajectory towards complete separation of humans from their environment thereby reinforcing exogenous attitudes to the environment and also explicitly restricting the reproduction of endogenous identities.

In spite of the instability, and dissatisfaction, inherent in these two identities both arise as the product of different 'natural' modes of engagement. As Ben and Neil articulate (chapter 6), this corresponds to an exogenous mode of action to conserve and an endogenous mode which is to chase. Although the genesis of these behaviours is unremarkable, and in many respects possibly random, they grow to perform important existential functions with both 'management' and 'hunting' exhibiting important ritual dimensions: 'management' functions to celebrate and maintain a transcendent life while 'hunting' allows the hunter to confront the immanence of death. In the former case, management activity assists the exogenous individual to accommodate an otherwise uncomfortable existential displacement, and, as Ben did, accept their localised non-belonging. In the latter, the individual asserts their belonging-in-place through the active displacement of environmental others.

8.3 Barriers to Uptake of Control Technologies

Current, and likely future, technologies of control have been applied in this region in ways that demarcate and defend both physical property and property as an idea. In this way they are also active in reconfiguring social and socioenvironmental relationships that support the reproduction of exogenous identities while threatening the practices that reinforce endogenous identities. This is true generally, and in relation to Hunters in particular. I do not seek to defend the vandalism of State property, nevertheless, I continue to interpret actions, such as the vandalism of a trap, as outcomes of relational processes. Thus, to some degree, I consider these actions as matters of shared culpability between the vandals and the producers and enforcers of the vandalised property (Butler 2005).

The processes by which scientific technologies of control have been developed imbue objects with particular meanings based on the collaborations that support their development. These processes, however, do not determine their meanings for endogenous actors. Resistance to technology is situationally produced differently across the scales that trace its development and implementation. This resistance is both physically manifest (through vandalism) and discursive, where scepticism may be articulated and transmitted across networks such as magazines, websites and pub-talk that reinforce and entrench oppositions.

The collaborations that are contributing to the production of currently dominant technological solutions are made possible through a shared platform of science, a platform that also defines their lawful existence thus privileging their application. Although, as I showed in chapter five, hunting is an evolutionary process, it lacks a scientific basis that hampers its development as a legitimate management technique. Hunting practice has been starved of bureaucratic or moral support indirectly, rather than directly, because it is based on non-scientific understandings of the environment.

The universality that science affords presents particular kinds of advantage to its (exogenous) adherents and has been a key element both in obtaining global protection for the region and insofar as it fosters collaborations between animal welfare groups and ecologists at a national level that thus informs the direction of pig management practice. As is evident in the bureaucratic processes that govern the development of technologies, agreement over process and over the value of scientific knowledge in this process is a more important facilitator of collaborations than is agreement over specific issues or the use of specific technologies. These factors that direct the material production of technologies are also interpretative acts; specifically, the production of technologies occurs alongside the production of legislation and policy that defines their acceptability.

Scientific arbitration supports scientific solutions assisting the formation of management solutions designed to produce a particular form of universalised Nature. However, forming and maintaining this idiosyncratic Scientific Nature through the leveraging of globalised support has come at the expense of isolating significant sectors of the population local to the problem. Scientific management's Achilles heel is that, although highly successful in the production of legislation, policy and technologies that support scientific rationales, it depends

on local communities paying for these interventions. Endogenous dwellers within local communities are asked to pay to maintain a Scientific Nature to which they do not necessarily subscribe and which, in some cases, threaten the reproduction of their identities.

8.4 Concluding Remarks: What is Management?

In this thesis I have demonstrated how environmental management practice may be, as I stated in chapter four, usefully understood as a dual faceted process with distinct social outcomes. Ostensibly, environmental management interventions are designed to achieve environmental purposes. However, as I have shown here, environmental management regimes are equally a 'gathering' (Latour 2004a) that reproduces the State, identities and society. Although some locally resident managers recognise how their activities impact upon local social relations, current management remains focused upon achieving scientific and bureaucratic management aims. I have argued here that the practice of defining management in the WTWHA broadly, and the Douglas Shire specifically, has been driven by an exogenous attempt to realise a modern aspiration of the world understood not simply in respect to a 'non-human Nature' but to manifest an ordering of the world with respect to dual categories of 'Nature' and 'Culture' (refer particularly to chapter 6). This in at least some respects clashes with the endogenous world view and yet the differences in practice are not necessarily irreconcilable.

Ultimately, the thesis suggests that management telos within environment governance needs to be transformed in order to reduce resistance to technologies and strategies. 'Management', as it is currently practiced, is taking place as the outcome of a translation (Latour 1993a) process. Formalised management is constructed by both the interpretive and physical adjustment and adaptation of a diverse set of technologies and identities that constitute management practices (like spotlight shooting) according to the purposes they are designed to address. Subsequently, management is used as a purifying function (Latour 1993a). It acts upon the world in order to manifest both a symbolically purified scientific Nature and an equally purified Culture complement. Through this scientific process, management displays a fugitive quality, as a ritual practice that assists its practitioners—'managers'—to resolve existential discomforts. Management not only assists managers to negotiate their non-

belonging, it presents a way to come to terms with mortality through servitude to an immortalised nature.

In making explicit that environmental management is, simultaneously, the management of culture whilst being itself a fugitive ritual practice, I do not suggest that this is in some way undesirable. Indeed, for the reasons I have outlined, it would be impossible to be otherwise. However, if management is to be an attempt to realise modernity it inevitably does so to the detriment of those who are not invested in this ideal. A lack of will within management endeavours to preserve diverse modes of engagement with environments is self defeating—a modernist position that upholds not only a singular reading of nature, but a mononaturalist ideology, is weak. While scientists, through scientific knowledge, have been powerful insofar as they determine the legislative, bureaucratic and development processes that become 'management' they are undermined, simply, by a local refusal to pay. In this region, the Achilles heel of current management is in its expense. Neither local nor State funding can be found to pay for the level of scientifically prescribed control necessary to achieve scientific management aims. This simple act of refusing to pay, however, has broader consequences for the long term governance of the region. Because this refusal is met with scientists' repeated attempts to 'engage' with communities to improve adoption, they reveal and then reinforce the view that scientific knowledge and technologies are knowledge and technologies of social control. Thus, while the scientists with whom I engaged wanted to know what influences 'adoption' by others, and continue to send further researchers to answer their question, I suggest that the question to be answered is how they themselves might *adapt* to alternative modes of engagement while achieving their own goals.

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