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A failing science:

Understanding private landowners in the forestry milieu

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of
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Declaration

I declare that this thesis is entirely my own work and to the best of my knowledge contains no written material by another person, except as directly referred to in the text.

(Date: 31-05-2004)

Peter Deane

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Abstract

This thesis contributes towards science studies in the forestry milieu, a topic little investigated. In particular, it directs attention to the paucity of theoretical and critical discourse amongst the private landowner research community. While conducting research into private forest landowners, significant difficulties were noted within the forestry milieu over understanding complex socio-material systems. Consequently, an assertion was made that there exists a single research rationality that has epistemic (knowledge) and normative (belief) characteristics which restrict how landowners can be known.

To assess the assertion, thirty-two research reports were analysed from within the landowner literature using insights from epistemology (theory of knowledge) and critical realism (philosophy on the nature of reality). The analysis was conducted through a general assessment of core epistemic and normative criteria across all cases, as well as of a single case showing how the normative and epistemic inter-relate.

It was found that one knowledge framework dominates. As a generalisation, it lacks conceptual sophistication and is largely a-theoretical, emphasising data collection by questionnaire and data analysis by statistics. The dominant knowledge framework proves to be objectivist, determinist, dualist, positivist and foundationalist. It is being informed by a normative approach that promotes managerialism to the exclusion of any other relational system regarding people and forests. Although the knowledge framework appears rational, the lack of critique and diversity in ways of building knowledge both internal to it and external to it across the research community, suggests the science produced in the research community that studies landowners is irrational.

This thesis may encourage critical dialogue alongside growing the potential for diverse theorisations and methodological care in research.

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Preface

This thesis reports on a science study undertaken in an effort to broaden the way human-nature inter-relations and inter-disciplinary research practices might be understood in the forestry milieu. It was written in response to an effort at inter-disciplinary research I undertook which foundered against the apparent lack of such knowledges in the milieu. In this all research has philosophical roots. It is unavoidable but not often explicitly engaged with-in the milieu. To engage though, is to enable. The intellectual traditions within forestry as far as I have read in relation to private forest landowners, the topic under critique herein, could be strengthened by more robust engagement with science studies. Consequently, I see my own journey writ large in the milieu itself which is currently grappling with complexities well beyond its normal remit. In this sense the critique presented here is a caring one, delivered in recognition of the difficulties experienced by researchers from within the milieu in crafting research into the socio-natural.

There is a powerful caveat that emerges from this scenario though, and which has a bearing on how this thesis might be read. It is that my understanding of science studies is basic, largely being obtained through self-guided learning (with all its many pitfalls). I make this statement in the knowledge that there will be errors in the text due to this, mostly relating to the sheer complexity of the topic and the early stage of my own journey into such. This is an unavoidable conundrum, as to have an interest in crossing disciplinary boundaries requires, I believe, some engagement with philosophical questions about science and knowing in contact with practice, a domain that remains vexatious not the least as it raises the question; what is it to be(ing)?

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1 | Understanding private forest landowners:
THE MACRO-STRUCTURE OF A SCIENCE

The problem: A single rationality restricts how landowners might be known

The assertion advanced in this thesis is that researchers in the forestry milieu who study private forest landowners are largely committed to a single research rationality that has particular epistemic and normative characteristics which severely restrict the way that landowners (and their inter-relationship with forests) can be known. Further, the extent of researchers' commitment to this rationality means that it would appear to occupy a hegemonic position in the forestry milieu, not only guaranteeing the rationality's systematic re-creation over time but also ensuring that whatever else might constitute evidence or what ought to be done is only ever meaningful when compared to this rationality.

An essential part of what researchers would appear to believe ought to be done is to secure and increase the applicability of forestry science to landowners, either indirectly through policy and/or extension or directly through the uptake of forest management practices by landowners. Sadly, the result of the dominance of the single research rationality is that the capacity of researchers in the milieu to produce complex accounts of the social and natural world is quite impoverished.

Without complex, diverse accounts, (applied science) prescriptions are likely to restrict the usefulness of forestry to a smaller group of landowners than need be the case.

This restriction is an ironic outcome in light of the forestry milieu researchers' interests in seeing an increase in the relevance of forestry science to as many landowners as possible. Here, in terms of landowners, if forestry science is understood less as an applied management tool but rather as a powerful (Western) socio-cultural artefact from which one way of understanding nature (forests) can be drawn or sensed, then the extant research rationality is more effectively discussed as an *irrationality*. If this assertion holds, then any steps that either weaken the rationality or, at best, collapse it, are a good. This thesis outlines the assertion given here in greater length and concludes, tentatively, by suggesting a number of possibilities for weakening the rationality while, more importantly, making a plea for a greater engagement with philosophy of science and broader theorising on self and nature amongst researchers of private forest landowners in the forestry milieu.

The problem focus of this thesis is on epistemic and normative elements in the literature

In order to argue out the above assertion and to justify its claims through some evidential practice, three sub-problems are presented that shape the overall argument. Therefore, the aims of this thesis are to:

1) discover what epistemic and normative commitments are evident in the literature on private landowners and forests;
2) determine what patterns of epistemic and normative commitments there may be; and,
3) determine what these patterns may mean for forestry science.

These aims will be discussed within the context of the macro-structure of science, which involves differing mixes of worldviews (scientific and cultural), research programs, theoretical perspectives and science knowledge products (after Patterson and Williams 1998). This thesis in

its broadest sense constitutes an investigation of the macro-structure of science evident within the literature of private forest landowner research.

It needs to be noted that up to this point the researchers, literature and forestry milieu have been discussed as a whole. In truth, from here on unless noted, all comments need to be contextualised as referring only to the actual literature reviewed (being thirty-two case examples).

How the problem arose and its importance

This thesis arose out of a context established between a sponsoring semi-government/business organisation and an academic department that represents a scientific discipline. They had wondered what landowners in the sponsor's region were thinking about doing with the forests on their properties. They had further wondered how these landowners might be offered support and guidance in gaining what they wanted and in which way they, the sponsor and the academy, might play a role in such. It became a task. The sponsor provided resources, funding for a student in the academy, opened doors and revealed the lay of the land. The academy, through the student, summed the knowledge on landowners and forests, then applied it to the task. After some struggle, a report was produced and options outlined, the original task seemingly met. The student went on to write a thesis, this thesis, but all was not well. The academy, the scientific discipline perhaps better discussed as a milieu, had succeeded but it will be argued that it had also failed in the way knowledge was summed and applied, although this is difficult to unpick. But as difficult as it may be, impossible it is not.

Science plays a fundamentally important role in the West's experiment of modernity[1] and, in turn, the further transformation of nature

[1] Modernity (in social theory) is both an active project and a semi-contained process, arising in 16th Century Europe and continuing today, that involves self-transforming social change (Haralambos *et al.,* 1996). It entailed a whole series of alterations in the material (economic), social, political and cultural basis of European society; specifically industrialisation, urbanisation, the scientific and democratic revolutions, the rise of capitalism, as well as other changes (Moore Jr. 1967; Pierson 1996). An important aspect is the rise in the autonomy of the individual and the fragmentation of cultural processes, especially those based on tradition (Delanty 1999).

(Giddens 1990). Unfortunately, the production of knowledge(s) by science, *i.e*., how we know (using science) what we know, has been poorly attended to within Western society as a whole (Knorr-Cetina 1999). This is not to say that sophisticated philosophical understanding does not exist in regard to how and what we know, such understanding does exist (and of particular interest herein is that which falls under the rubric of science studies[2]). What is missing are widespread and even-handed applications of such sophisticated philosophical understanding towards destabilising fixed and limited positions, most notably in this case an applied science. In other words, certain kinds of how we know what we know are privileged above others (Flyvbjerg 2001), not just within the sciences but also in regard to science and other knowledge systems. Moreover, they are largely privileged by generally avoiding the very scrutiny they are considered to bring to bear on the 'things out there' in the world. This, it may be held, is a problem.

Here then is a story of one such privileging. It is a short story and one largely concentrating on the mechanisms that lie behind and entangled with the privileging, rather than of the specific particulars of those involved. In this it has its vagaries, like the reification evident in these paragraphs, but it should suffice to show why it might be asserted in the first place that if you legitimately only know the world in one of a few ways then your capacity for action is likely to be truncated in a world complex beyond all knowing. Do this for long enough and you and your discipline may get left behind - modernity waits for no-one.

[2] Science studies involve the investigation of science (and technology) as a social or cultural phenomenon (Bullock and Trombley 1999). It includes such areas as Science and Technology Studies (STS), Sociology of Scientific Knowledge (SSK), philosophy of science and the sub-area of philosophy of social science (plus notably herein feminist (social) epistemology) (Longino 1991; Shapin 1995; Demeritt 1996; Godfrey-Smith 2003).

How the problem arose

In July 1999, I came across an advertisement for a Master of Philosophy scholarship in the Department of Forestry, Australian National University, funded in collaboration with a private sponsor[3]. In part, it read:

> [The Master of Philosophy candidate will aim]…to access the contributions that private native forests can make to meet regional conservation objectives and to contribute to timber production [in the South-East of NSW]. This will include a survey of management intent of landholders and the assessment of the feasibility of those intentions. The project will evaluate the willingness of landholders to implement best management practices, and their ability to practice adaptive management…[and the researcher will need to]…engage in a collaborative learning process with the community of participating landholders.

At the time, although employed, I was thinking about further study, hopefully with people and forests which had been an earlier line of study in my life[4]. The advert seemed ready made. I applied, was successful[5] and undertook a process that has eventuated in this thesis.

I was blessed to have an amenable and keen sponsor in Simon Greenaway of the South-East New South Wales Private Forestry, a semi-government/business entity primarily resourced by the Australian government, based in Bega, New South Wales. Funding was directed through the *'South-East New South Wales Private Native Forest Management and Value Added Project'*. In turn, this project sourced its funding from the Natural Heritage Trust of the Australian Commonwealth Government and was under the direction of the South-East

[3] For the most part, this thesis is written in the third person. This reflects how most of the research on private forest landowners is written. Occasionally, the first person is used in this thesis, notably where my active voice would assist the narrative strongly such as in this sub-section on the growth and aims of this research.

[4] Previously, I had completed a Bachelor of Applied Science (Honours), writing a thesis focused on discovering what patterns existed between a set of fauna and flora species across three differing spatial scales (local, catchment and regional) (Deane 1994). Forests played a significant role in the research. I had also completed a Master of Arts (Preliminary) that had concentrated on the promise of community forestry in Nepal and difficulties it might have in meeting such a promise as operating within Northern framings of development (Deane 1997). Across these two projects, I had developed an interest in bio-physical issues surrounding and informing forests as well as the social context of forests and people.

[5] The Master of Philosophy was sponsored initially for one year but, in the end, a two year scholarship at the Australian Postgraduate Award rate was granted (approximately AUS$16,000 per year), as well as funding for research (approximately AUS$5,000 across the project) and also access to resources and people attached to SE NSW Private Forestry. The sponsor thus had a strong stake in the research.

NSW Regional Plantation Committee. The project, which had as one of its partners the Australian National University's Department of Forestry (now, School of Resources, Environment and Society), had two primary objectives:

> 1. Promote sustainable native forest management practices on private property in the South-East of NSW.
>
> 2. Support the development of a value-added timber manufacturing industry to utilise this resource (Commonwealth Department of Agriculture, Fisheries and Forestry n.d).

The managers of the project had found that very little was known about how landowners in the South-East wished to use their native forests. In order to develop some data on this, they posted the Master of Philosophy advertisement as an initial step towards such an end.

In order to more adequately determine the needs of the sponsor I interviewed Simon Greenaway in November 1999. A variety of different issues were discussed during the interview and important boundaries were clarified. These included a re-affirmation of the desire to determine landowners' intentions towards their forests:

> ...[the research should] explore why they [landholders] manage the forest and then look at mechanisms to make linkages with those individuals or those landholders and develop their landuse practices with regard to any of the management intent...[the outcome from the research would be] basically a profile of landholders and why they are managing the forests, I see that as part of the outcome and then the appropriate strategies to develop partnerships with those individuals for their needs for their forests... [Simon Greenaway, 26th November 1999].

Expressed clearly here is the desire not only to determine through some evidential practice a profile of management intent, but also a normative commitment to engaging landowners in an educative practice in relation to their intent. The particulars though of how these were to be realised resided not so much with the sponsor but with the discipline of forestry within the broader milieu of forestry. Although I made a significant effort to make the research for the sponsor both interdisciplinary[6] and epistemically diverse (pluralist), I was constantly

[6] Broadly, the original 4 people on the project covered the areas of forestry, sociology and development studies. My initial design, later abandoned, covered psychology, philosophy, sociology and human geography.

reminded by a range of issues of what was acceptable knowledge within the milieu, having at least partly to do with the traditional focus of forestry.

Forestry is said to be: "…the art, science and practice of managing…forestland for human benefit" (Young 1982: 1), although a number of definitions exist for the term (see Helms 2002). The forestry milieu can be thought of as a collection of governmental, business, educational, research and professional organisations concerned with forestry (Dargavel 1995). Forestry can also be thought of in a formal sense as a natural science discipline. Although bracketing a discipline by the identifiers of natural and social science is a simplification[7], the bulk of research conducted in forestry is strongly bio-physical in character, principally investigating the growth, ecology and health of trees and forests. Social research is a relatively minor and peripheral component, although growing, within forestry:

> [r]esearch on forests has not only suffered from a lack of resources. It has been fragmented and highly site-specific. It has never been organised in such a way as to yield a holistic vision of forests. The research effort is distributed in discipline based or production sector institutions. A surprisingly large number of forest research institutions in the world still do not include social scientists amongst their staff (CIFOR 1995: i).

The context of this, amongst a set of other issues that will be further discussed as this thesis unfolds, is that the social sciences and interdisciplinary research more generally are subservient to the dominant and un-reflexive historical, normative and epistemic standpoints currently existing within forestry. One aspect of these commitments could

[7] As an explanatory device, social science, on the one hand, and natural science, on the other hand, can be used to broadly outline philosophical, epistemological, theoretical perspective and disciplinary gulfs that exist in science generally. Thus social sciences focus upon: "...the elements of consciousness and choice in the sphere of human relations" (Bullock and Trombley 1999: 564). Social science includes, for instance, the disciplines of economics, sociology and political science. Further, within the social sciences, there are a number of epistemological positions available for use (*i.e.*, objectivism, constructionism and subjectivism), alongside a wide range of theoretical perspectives (*i.e.*, critical theory, post-positivism, interpretivism, *etc*) (Crotty 1998). The natural sciences are: "...those branches of organized knowledge concerned with the material aspects of existence" (Bullock and Trombley 1999: 564). Natural science includes the disciplines of physics, chemistry, and biology, for instance. It is generally epistemologically objectivist and has a theoretical perspective that is primarily positivist or post-positivist (although positivism can also be discussed as an epistemology). Some disciplines can be considered as combining elements of both social and natural science, such as psychology and geography.

be summarised with the word naturalism, which (rather simply here) holds that the techniques of the natural sciences produce the most effective knowledge (as only natural things exist). This incorporates a view of science as an ever more comprehensive set of universal laws, unitary in nature, that will lead humanity to possess: "….nomological [law-like] knowledge of reality in its entirety" (Mjøset 1999: 1). Further, researching human social life is depicted in this framework as little different to modelling trees or forests, focused on displaying regularities easily typologised through social research strategies that have underlying (epistemic) similarities to natural science techniques. Most notably in this, there is a strict separation between the subject (*i.e.*, researcher) and the object (*i.e.*, researched)[8]. Alongside this, nature, as has already been implied, is primarily understood as a material reality external to the human and available to be manipulated for human needs.

The broad problem of restricted conceptions of what is the right way to know is not restricted to forestry. Miller (1994) notes, in a discussion of global research collaboration, that not enough thought has generally been put into the formulation of research projects that stretch beyond the boundaries of one field or (sub-) discipline. This is especially so for projects embedded deep within natural science dominated contexts and which have the inside running on most nature orientated research due to their historical affinity with providing legitimate environmental information. This presents a challenge to natural scientists and the organisational contexts they work under when meshing with the uncertain social sciences and the conflicting arguments over what is reality and how do you interpret it that exist within the social sciences. It is not unsurprising then, that one natural science field or (sub-) discipline might come to dominate a research project, drawing on other disciplines to fill its own agenda:

> [t]oo often, the underlying goal of interdisciplinary collaboration is advancing research or filling lacunae in the discipline of the

[8] The subject is the 'I' who has subjective experiences (perceives and is active) while the object is the observed (is perceived and is inactive or passive). Subject/object dualism is discussed in Plumwood (2002: 45-56), although in origin it is probably attributable to the metaphysics of the German philosopher (Georg Wilhelm Friedrich) Hegel (1770-1831).

> originator of the research. However, if this goal dominates, the resulting research may fit into an extant disciplinary framework but it is not likely to take full advantage of the joint contribution of both broad fields of science (Miller 1994: 23).

No matter that the above quotes concentrate on matters of global research collaboration, the general issue carries for the forestry milieu. The aspects so far touched upon: the dominance of naturalism in the forestry milieu; the singular understanding of humans and forests as knowable through invariant, universal laws; and, an inability to accept other fields or (sub-) disciplines as relatively equal partners in interdisciplinary collaboration, led to strong constraints applying from within forestry to the research practice deployed for the sponsor. There were no doubt many practical mechanisms within the space of the Australian National University Department of Forestry which helped produce such a reality: discussions undertaken, histories discerned, readings concluded, artefacts noted and interpreted, all driving the impression, the sense that there was a right way, an acceptable way to shape research. This could be counterpoised against other ways to do research which were downplayed, avoided or simply not seen at all and, at worst, ignored or dismissed[9].

In the end, the implied right way within the forestry milieu was to produce a piece of sample-survey research within a framework that could loosely be labelled as abstract empiricism. It conforms in many ways to what might be considered the standard approach in the topic literature towards depicting an external and material natural and social world through an objective, value-neutral knowing, emphasising a "…nomological knowledge of reality…" (Mjøset 1999: 1). The final outcome for the sponsor was a report detailing such a survey (Deane, Schirmer and Bauhus 2003 – a summary can be found in Appendix 2).

As part of the project, I had spent some time moving amongst landowners in the South-East, talking and walking in the forests. An observation from this process was that it allowed not only entry to the day-to-

[9] This is not a criticism of the Departmental space *per se*, but rather a reflection on the normal operations of a discipline, in which "…we learn what to pay attention to and what to set aside…" (Toulmin 2001: 42), although in potentially contradictory and contested spaces (Thompson-Klein 1993).

day lives of landowners, but it also meant that I was exposed to the political consequences of (at that stage) the potential results from the project. This connectivity touches upon the second of Simon Greenaway's concerns about seeking co-learning partnerships with landowners. The final research design, the survey, although suggesting avenues for co-ordination with landowners and policy change, effectively removed them from any hope of influencing the outcome as participants/subjects rather than as objects. In other words, the survey could provide some truncated insight into the first of Simon Greenaway's interests around intentionality, but it was most certainly *not* a good research strategy for the second of his concerns. More so if taken from the ethical standpoint that people should have some ability to affect a research strategy that may then dictate changes having an impact on their lives.

Although there are a number of different dimensions that could be explored to show how a research topic such as that of private forest landowners could be dominated by only one way of understanding people and nature, for instance such as through a case study of the sponsored research itself, it is perhaps easiest to depict it through an analysis of the relevant literature.

What the literature does is to strongly influence how it appears that landowners should be researched, known and acted upon. This kind of impact is not just on the researcher but on all those who might take an interest in the topic. It also attaches to the point made by Miller (1994) earlier, when discussing interdisciplinary collaboration, that interdisciplinary research can come down to filling gaps (lacunae) in the dominant discipline (in this case forestry). This is a persistent problem for the social sciences when operating within the remit of disciplines dominated by the natural sciences and in which they are frequently required to under-labour. In such a role, meaningful dialogue about different ways to understand what it is to be human and what nature may be under differing contexts, is unlikely (and unwelcome), because of the seeming importance of filling vital gaps in the extant literature. As will become evident, by closing down the possibility of diverse research strategies, and hence ways of knowing within the literature, the

discipline of forestry renders itself mute in the face of reasonable requests for a more active, engaged forest science, broadly relevant to people anywhere. This then is the heart of the assertion made in this thesis: a plea for embracing knowledge diversity against a single research rationality, and a plea for opening access to the research process for those and that classed as other in research, so they can more meaningfully become participants in the writing of their histories.

Why might the problem be important?

The importance of this study is in firstly clarifying the existence of a single research rationality which is acting as a powerful mechanism towards restricting forest science in relation to private forest landowners. Secondly, once it is established that there is a single research rationality, it is suggested that other rationalities can be moulded so as to craft new ways of enhancing the capacity of forest science to enrich the lives of people (and in turn being enriched by them).

General thesis design: Literature assessing

Detailed here is the type of thesis this is. Although this sub-section briefly contextualises the reviewed literature and notes the broad categories from which it was chosen, full discussion on what literature was incorporated is deferred to Chapter 2. The actual practice undertaken to analyse the literature is further reviewed in the relevant sub-section of each analysis task across the chapters that follow.

This thesis challenges the effectiveness of the (reviewed) literature to inform practices both in the academy and out in the world. It does this though exploring the inner workings of the research processes undertaken to produce knowledge on private forest landowners in the forestry milieu. Regarding this study, there is no chapter dedicated explicitly to research design, strategy or methods. Design elements are largely discussed in this chapter. As a literature assessing thesis, the issue of the thesis research design is less obvious and less important in comparison to crafting a robust and logical argument.

The purpose of this thesis is to demonstrate that the assertion about the dominance of a single research rationality is reasonable. To that end, thirty-two cases from the literature are reviewed. The literature was drawn from research into private forest landowners which forms a particular sub-stream within the general literature of the forestry milieu. The assessed research is strongly empirical as well as applied in nature. It is also extensive, with the vast bulk being located in North America or Europe. The Australian and New Zealand literature is small in comparison with the North American or European, and what there is has a strong focus on plantations on private land generally known as farm forestry, a topic area bound-out of this thesis.

The general aim is to conduct an epistemological, methodological[10] and meta-theoretical review[11] (after Hart 1998) on thirty-two (case) studies in the international, Australian and New Zealand literature, published up to 2001. Such a review, at least as constructed here, involves analysing and synthesising the literature in regard to its commitments regarding ontological, epistemological, axiological[12], methodological, meta-theoretical and ethical (normative) frameworks.

In practice, this thesis asks a series of questions in relation to each literature case (see Table 1.1 on p. 14). The creation (and practising out) of these questions has been influenced by a number of sources, though not following any of them specifically (these are Rose 1982; Babbie 1992; Dey 1993; Morrow and Brown 1994; Yin 1994; Leedy 1997; Van Evera 1997; Crotty 1998; Hart 1998; Patterson and Williams 1998; Tashakkori and Teddlie 1998; Blaikie 2000; Sayer 2000; de Vaus

[10] Methodology is commonly and confusingly used in two ways. Firstly, it is used to discuss research practice/method, where method is a technique of data collection, selection, and/or analysis (implicitly embedded in a research strategy or paradigm). Secondly, and as used in this thesis, methodology is the strategy and justification behind knowledge production, in terms of aims, concepts, principles, methods and theories (Morrow and Brown 1994; Bullock and Trombley 1999; Midgley 2000).

[11] Meta-theory is: "….theory about theory, where 'meta' refers to that which is 'beyond' theory or, more precisely, that which lies behind the theory's presuppositions….[it is another way for scientists]….to talk about the philosophical and methodological assumptions of their work….[and is]….associated with and draws on the major branches of philosophy: *metaphysics, ontology, epistemology, ethics, aesthetics, ethics*", (Morrow and Brown 1994: 46-47 – italics are in original text).

[12] Axiological, in this thesis, refers to foundational (or fundamental) values, what they might be under certain circumstances and how we know or experience them (*Encyclopaedia Britannica* 1976). They will be discussed herein, relating to the goals of particular 'kinds' of science (after Patterson and Williams 1998).

2001; Gerring 2001; de Vaus 2002; Flick 2002; Creswell 2003; Godfrey-Smith 2003).

The sections in Table 1.1 are presented in a cookbook fashion, even though the actual form of each piece of the literature involved is far more messy and disguised than is apparent from the writing here. This is not surprising, as research designs and strategies can conceal their meta-theoretical and methodological commitments. If their assumptions are not explicitly explored, then the reader is left with a degree of guesswork. Further difficulties arise in the lack of a common framework for dealing with all the various ways we attempt to know the world:

> …characterizing and comparing specific research traditions is difficult due to the holistic nature of the interdependent commitments, the existence of different levels of specificity with which the macro-structure [of science] can be described, and the lack of standard terminology for describing the macro-structure…(Patterson and Williams 1998: 284-285).

Finally, and most problematically of all, this thesis focuses on textual artefacts and can only infer the practices that went together to put such texts together. In other words, it would be a mistake to assume that the discourse (as text) is equivalent with the practice (Harré 1986), further restricting what can firmly be said. This thesis should be read with this caveat firmly in mind. Each of the primary aims in Table 1.1, are encountered so that the less complex components of the argument are met first and there is a steady build of argumentative engagement, peaking in Chapter 5.

Primary aim	Subsidiary aims
Questions posed (across the cases) (in Chapter 2)	Who did the research?
	Where was the research conducted?
	What questions were posed?
Concepts used (in Chapter 3)	What concepts were utilised?
	To what extent were concepts defined?
Theory used (in Chapter 3)	What was the primary approach to theory?
	What theory was used to understand human behaviour?
	What theory was used to describe human-nature inter-relationships?
Research design and methods used (in Chapter 3)	What explanatory strategies were deployed?
	What were the methods of data collection/selection?
	What were the methods of data analysis/synthesis?
	What was the form of research analysis or synthesis (*i.e.*, ranking/associational, typological or thematic)?
	What was the time-frame (*i.e.*, synchronic or diachronic)?
	How was the quality of practice (*i.e.*, how well was the research carried out)?
Normative commitments underlying the epistemic (in Chapter 3)	What ontological, epistemological and axiological commitments were made?
Normative commitments generally (in Chapter 4)	What normative commitment/s is/are most evident?
Epistemic and normative inter-links (in Chapter 5)	How do the epistemic and the normative come together as a scientific result in a single research case?
	How is irrationality (in a scientific community) established?

Table 1.1: The primary and subsidiary aims of this thesis

Van Evera (1997: 89-95) details eight different types of thesis[13]: (1) theory-proposing; (2) theory-testing; (3) literature-assessing; (4) policy-evaluative; (5) historical explanatory; (6) historical evaluative; (7) predictive; and, (8) descriptive. Theory-testing and theory-proposing (and mixes of both) are common in the forestry discipline. The rest are less common and in some cases, lack legitimacy. The thesis type here is that of literature-assessing, rarer in the forestry discipline but still found, and in this case presenting a forecast (in the form of an assertion) that relies on an evaluation of the empirical literature in a topic area[14]. It asks whether the existing literature is valuable and if the empirical research conducted is "…persuasive and complete" (Van Evera 1997: 90). As the argument here has already suggested, it is neither persuasive nor remotely capable of transferring a broad understanding of private forest landowners.

In critiquing the literature and building this argument a caveat should be noted, and this relates to being cautious when critiquing one intellectual tradition (*i.e*., social research within the forestry milieu) with another intellectual tradition (*e.g*., sociology and philosophy). Care should be taken in doing this and this is well noted by Hart (1998) who states:

> [t]he different intellectual traditions need to be appreciated for what they are and not what they are assumed to lack from another standpoint (p. 11).

So, although a critique is conducted it recognises the difficulties experienced by researchers practicing from within a (broadly) natural science discipline in the crafting of socio-natural research. This is especially so when a research tradition does not necessarily support such activity to the same extent as available in other parts of the sciences. The intention here is to highlight the need for drawing more deeply on not just the broader traditions and insights within sociology and the social sciences,

[13] Van Evera (1997) discusses the eight different types of thesis from the perspective of political science, but they are effectively utilisable for this discussion.

[14] To be clear, this thesis is *not* about theory testing or theory constructing, even though it utilises basic numerical counts (which are essentially empirical measures). It summarises and evaluates in the testing of an argument and in this case uses theory to structure the testing but does not (much) explain or develop theory out from that. This makes the thesis quite descriptive and supports a line of reasoning in science studies that makes the case for expanding the number of such basic, numerical and descriptive studies as a base for later theorisation.

but from science and non-science generally for the future conduct of socio-natural research in the forestry milieu.

A final clarification is needed so as to be absolutely clear about what I am trying to achieve herein. This thesis attempts to minimise critical judgements, by and large, about what is a good methodology, theory, epistemology, *etc*., (*e.g*., interpretivism is better than positivism)[15]. It assumes that no matter what framework (as a particular mix of methodology, theory, epistemology, *etc*) is deployed, as long as the claimed methodology is broadly adhered to in practice, the overall research will have at least some reasonable validity as a way of knowing. More effectively, what this thesis presents is a determination (rather roughly considering the complexity of the task) of what framework we face in a particular piece of research. Then it presents how adequately that research matches its practice to the framework involved and, finally, what this means in terms of the results given. Emerging from this process then, is a structure that details what and how we know about landowners and forests (from within the forestry milieu and more specifically the discipline) which allows the assertion this thesis is built upon to be legitimated (although whether or not it is reasonable assertion is a question only the reader will be able to answer).

Boundaries of the thesis

The inter-relationship between people and forests is studied by many disciplines. In order to keep the review manageable and focused on the core literature likely to be initially encountered when studying private forest landowners from within the forestry milieu, the following boundaries for inclusion were established. It was decided that the literature would have the following characteristics in order to qualify for inclusion:

1) focus on private landowners with forest on their properties in OECD countries[16];
2) be written in English (sole language of the author);

[15] There is a partial exception to this rule, in that 'abstract empiricism' does come in for criticism.

[16] OECD (Organisation for Economic Co-operation and Development) countries have similar developmental attributes to Australia, in that they share commitment to forms of democratic governance and the (capitalist) market economy (OECD 2003).

3) detail the collection or selection of primary (empirical) data; and,
4) be drawn from the milieu of forestry (*i.e*., forestry serials or monographs, works written by people from a forestry background, those which draw mainly from forestry material, *etc*).

A fifth boundary was set due to the relative scarcity of Australian literature:

5) focus on broad concepts, which allow for a greater scope of investigation (*e.g*., what uses did you make of forest), rather than compared to narrower concepts (*e.g*., what type of silvicultural practice/s have you used).

As briefly noted in point 4 above, at least one author of each piece of literature was either affiliated with a forestry educational organisation or forestry focused government department at the time of writing and/or the piece of literature had been published in a forestry serial. There are a number of clarifications to this rule for five of the literature pieces used herein:

1) Bourke and Luloff (1994), published in *Society and Natural Resources* and written out of an agricultural economics and rural sociology department (Pennsylvania State University). It extensively uses forestry milieu literature.
2) Sinclair and Knuth (2000), published in *Society and Natural Resources* and written out of a Department of Natural Resources (Cornell University). It extensively uses forestry milieu literature.
3) Wilson, G. (1992), published in *Journal of Environmental Management* and written out of the Department of Geography (University of Otago). It uses forestry milieu literature and can be considered a paper that overlaps the outer-edge of the forestry milieu. It has been included here due to the lack of objective or goal orientated research from New Zealand and as an effort to bolster the Australasian focused literature on the topic.
4) Wilson, S., *et al.* (1995), published by the Australian Bureau of Resource Economics, and written by members of its then staff. It uses natural-resource management literature with a focus on forests and can also be considered a paper that overlaps the outer-edge of the

forestry milieu. It has been included here due to the lack of objective or goal orientated research from Australia and its place as one of the earlier broad surveys of (farmers and) trees in the rural landscape.

5) Jenkins (1998), published by Environment Australia and written by Suzanne Jenkins for Agriculture Western Australia and the Department of Conversation and Land Management. It has a focus on vegetation and is at the very outer-edge of the forestry milieu. It has been included here due to the lack of objective or goal orientated research from Australia.

In order to keep the review manageable in terms of the total number of pieces of literature, it was thought that approximately thirty cases would offer a reasonable cross-section of the available literature, being neither too few for obtaining a sense of the extant literature, nor too many in terms of time taken to conduct the review. More details on the selection of the final thirty-two literature cases are given in Chapter 2.

Theorising the problem: Critical realism, eco-feminism, theory on science, adaptive theory

This thesis is theory soaked. It is also rather eclectic in its approach to the world. What this comes down to is that four theoretical perspectives are used to bind the overall argument:

- critical realism: the ontology of the thesis[17];
- eco-feminism: the normative orientation of the thesis;
- critical contextual empiricism: what science might be; and,
- adaptive theory: a tool for theorising.

These may all be thought of as examples of theoretical perspectives that provide language, concepts, relationships, propositions and so forth for broadly understanding the world. Such perspectives are not directly about providing empirical or explanatory devices for research practice and they can be highly abstract and obtuse (Blaikie 2000).

[17] Ontology is “theory of being” or “theory of what there is” (Mautner 1996: 401).

Often theoretical perspectives can be significantly at odds with each other (*i.e.*, incompatible, to varying degrees). In an effort to deal with this problem, all of the above perspectives have been incorporated on the basis of their relative capacity to, at least, co-exist. Further, critical realism provides the central perspective to which everything has had to co-ordinate. Other less central theories used in this thesis as the argument is developed and then concluded, stretch but do not break this statement. This is most notable in the utilisation of some insights from ethnomethodology in Chapter 5, a theoretical perspective which could be argued is incompatible with critical realism (which is one reason why it is not directly used, rather it provides sensitising ideas).

The role of critical realism in this thesis

Critical realism (an ontology) envelops and frames this thesis, helping the author to contextualise the literature while avoiding a position on what is best after the various critiques have been written out across the thesis. It also provides legitimation and explanation for the normative synthesis that is woven throughout the thesis and which finally leads to the statement about what is good in forest science. It is not the role of this sub-section to chart critical realism, as it is essentially serving as a background framework and guidepost to thinking rather than a set of strict rules about one way (amongst many) regarding how to make sense of and practice in the world. Never-the-less, some basic comments will be made, most notably to more adequately contextualise a description of the emancipatory element within critical realism which does have a strong influence on this thesis.

Critical realism broadly described

Critical realism is a complex philosophical ontology[18], most notably initially popularised in the social sciences by Harré (1972), then Bhaskar (1975, 1989, 2002) and Outhwaite (1987)[19]. It is difficult to give a straightforward overview of critical realism, not the least as such an overview is dependent on which writers are drawn upon and what critiques are included. But for the sake of effectiveness, Bell (2001) states that critical realism:

> …recognizes that all science is to some extent presumptive and qualitatively judgemental in nature; that presuppositions are inevitable; that the historical context affects science (including physics); that science is a social process and that scientists are human beings (with all their faults); that the manipulation of events should have precedence over mere correspondence in time and space as a criterion of powerful knowledge; that social causality can and should be linked to people's intentions and purposes as well as to passively observed concomitances; that knowledge is uncertain; and that plausibility is sometimes the best result we can obtain. It acknowledges that science has a place for creativity, imagination, intuition, and insight, and it recognizes that many aspects of reality may always remain beyond human ability to observe and understand…critical realists believe that how the world really is plays a decisive role in the achievements of science, that truth can be known within the limits of human senses and intellect, and that warranted assertability is possible. Critical realists do not demand that the truth of a proposition be justified, but only that a person is justified in believing that the proposition is true…[further]…they accept beliefs as warranted if the evidence supporting them remains unrefuted. They believe that knowledge is conjectural and they allow for the possibility that conjectural knowledge may turn out to be false (p. 69).

[18] Critical realism is, and remains today, primarily an exercise in philosophy (Wai-chung Yeung 1997). It is ontologically realist (with a materialist element, though avoiding determinism) and epistemologically has both realist and relativist elements (in its later form, if allied to Bhaskar, the whole ontological/epistemological structure takes on an even more complex hue (see Hartwig 2001)). There have been efforts to create critical realist methodology and methods, notably Pawson and Tilley's (1997) 'realistic evaluation' (with a critical realist interview technique) and Byrne's (2002) 'complex realism' (with variate-trace analysis). See also Wai-chung Yeung (1997); Bernard-Donals (1998); Williams (2003).

[19] There are rather a large number of realism's (see Niiniluoto 2002). Simply here though, amongst those commonly mentioned, critical realism can be differentiated from naïve or direct realism and from scientific realism (see Bunge 1996; Godfrey-Smith 2003).

For the rest of this discussion, it is Bhaskar's earlier version of critical realism that is broadly drawn from, as reviewed and reflected upon in Bhaskar's *Reclaiming Reality* (1989)[20].

One of the core criteria of critical realism, and a slightly more complex rendition of it, is that things in the world exist (*i.e*., are independent of mind) and have a structure which can exist unexercised or "…regardless of what we think about it" (this is known as the *intransitive*) (Sayer 2000: 2-3). Humans can, with science for instance, contingently reconstruct elements of those structures and mechanisms from a variety of epistemological standpoints (this is the *transitive,* of theories and concepts for instance), though we construct through a social process which allows us to adjudge superior descriptions. In this, the world is split into three dimensions - the 'real', the 'actual' and the 'empirical':

> ...the real is whatever exists, be it natural or social...[and it]...is the realm of objects, their structures and powers...[which have]...capacities to behave in particular ways, and causal liabilities or passive powers, that is specific susceptibilities to certain kinds of change...[T]he *actual* refers to what happens if and when those powers are activated...The *empirical* is defined as the domain of experience...[which are the observable aspects of the real or actual] (Sayer 2000: 11-12 – italics are in original text).

As compared to a cause-effect model of the world (oft associated with positivism) where a succession of events (regularities) causes an effect which is effectively fixed (predictable), critical realism posits that in the transitive space of science, which can artificially close a system, we (only ever) attempt to identify the real (what exists) and the actual (what is possible) within systems that are in the end contingently and complexly open:

> [the world has]...ontological depth: events arise from the workings of mechanisms which derive from the structure of objects, and they take place within geo-historical contexts (Sayer 2000: 15).

[20] Critical realism is a hybrid and umbrella name others have used and that can incorporate what Bhaskar calls, on one hand, transcendental realism (as a general philosophy of science) and, on the other hand, critical naturalism (as a special philosophy of the human sciences) (Bhaskar 1989) . Bhaskar continues to journey, and has altered and re-cast his work over the years (see Lacey 1997; Creaven 2001; Bhaskar 2002; Harvey 2002; Patomäki 2002).

Therefore, powers or tendencies exist both activated and latent throughout differing layers of the social and natural, so meaning that the way the world is now does not mean that it is the only way it has to be[21]. Determinism is strongly avoided in this and the critical stance is emphasised in creating new or different pathways into the future[22].

In the end, Bhaskar's approach seeks a form of unity between the social and natural sciences and this strongly speaks to its usefulness in framing the analysis of the literature herein, as:

> ...[critical] realism provides a way of integrating philosophical and sociological (historical) studies of practices such as science…[p. 24] [and it]...embraces a coherent account of the nature of nature, society, science, human agency and philosophy (including itself). Its intent is to under-labour for science, conceived as a necessary but insufficient agency of human emancipation (Bhaskar 1989: 191).

It also keeps in frame a modified naturalism, alongside understanding social life as interpretable and context laden. So critical realism helps make ontological and epistemological awareness pre-eminent, thereby creating a sensitised context for assessing research designs as primary statements about how the world 'is' and then superimposing a further contextual awareness of how it 'ought' to be.

The emancipatory potential of critical realism

> There is a remarkable imbalance between our ability to think about the social world positively or scientifically, as something to be understood and explained, and our ability to think about it normatively, or even to think how it might be (Sayer 2000: 157).

This quote from Sayer in the context of the emancipatory potential of critical realism cuts straight to one of its central strengths: it offers a systematic and clear appreciation of the need for normative evaluation

[21] Critical realism emphasises a retroductive logic, as compared to the deductive and inductive logics used in positivism. That is: "[deduction moves for instance]…from the *general* claim that "all polar bears are white" to the *particular* inference that the next one seen will be white….induction is to move from the *particular* observation of numerous white polar bears to the *general* claim that "all polar bears are white"….retroduct[ion]….is to move from the observation of numerous white polar bears to a theory of a mechanism intrinsic (and perhaps also extrinsic) to polar bears that disposes them to being white" (Lawson 1995: 14 – italics are in original text). So here, retroduction can be seen as the investigation of the cause of causes (that would be in the above example, producing an explanatory model of the mechanism of whiteness of polar bears) (Blaikie 2000).

[22] Critiques of critical realism can be found in Pleasants (1999); Blaikie (2000); Peacock (2000); Creaven (2001); Franklin (2002); Patomäki (2002).

in (social) science (which often hides in practice, an implicit change for the better ethic). Bhaskar (1989) explains this normative evaluation as:

> …if one can demonstrate the (contingently necessary) sufficiency of a structure (state of affairs or set of circumstances) for a false, inadequate or partial (one sided) belief, then one can pass straight away *ceteris paribus* to a negative evaluation of that structure (or whatever) and *ceteris paribus* to a positive evaluation on action rationally directed at removing, transforming or dissolving it thence *ceteris paribus* to such an action…(Bhaskar 1989: 186-187)[23].

What Sayer (2000) goes onto say though, is that this is a contentious standpoint in the (social) sciences (as it suggests ought can come from is) and that by and large there has not been enough thought given to the consequences of this in critical realist approaches. Sayer (2000) then outlines arguments that can help manoeuvre around the problem of ought from is, and for engaging with the relative lack of mature ethical or political systems for elucidating standpoints of critique.

Sayer (2000) argues for not just determining what ought to be, but also that the standpoint from which a social phenomenon has been critiqued needs to be clearly expressed. In this thesis, such a step is built through two processes. The two processes are, on one hand, through the application of insights from eco-feminism (discussed shortly) and on the other, through a focus on the idea of (an unfavourable) normative commitment[24]. Once such is outlined as existing regarding some context, then the further task is to describe:

1) Why it might be held.
2) What might produce it.
3) What potential alternatives arise, as backed by an expressed moral and political philosophy (alongside leaving depicted philosophical positions open to necessary critique and further dialogue on what may be done or not, as the case may be).

[23] *Ceteris paribus* is Latin for 'other things being equal' (see Baggine and Fosl 2003).
[24] In the final analysis, this will be through a focus on a particular normative commitment evident in a number of the cases and which consistently promotes (timber/forest) managerialism, of one kind or another. When translated through social boundaries into communicative and practice environments outside of the forestry milieu it can be thought of as an unfavourable ideology to researchers and those researched.

4) Asking if what ought to be is feasible. This final category contains further differentiation between both political feasibility (*i.e*., is political mobilisation likely to occur) and practical feasibility (*i.e*., is the end state feasible in itself). This includes reflexive questioning on thinking through, once an outcome has been envisioned, whether it might privilege some other group, or does it make particularly naive renditions of social life, or on whose terms does a good get defined and so forth (after Sayer 2000).

This last question is most assiduously aimed at focusing on the issue that:

> …social change is inherently contradictory and dilemmatic and that while those contradictions and dilemmas continually mutate there is no sign of any reduction in their number or severity (Sayer 2000: 169).

One way of looking at this is if an ought is put forward it is necessary to be aware that it may lead to something bad or worse than that which is supposedly being replaced or enabled.

The four points detailed above are rudimentarily engaged with as the thesis progresses. The first site follows immediately upon this paragraph. It details a small number of general ethical and ideological standpoints that effectively underwrite the normative analysis and the thesis as a whole. The second site is within Chapter 4, focusing on the normative commitment of the 'NIPF (Non-Industrial Private Forest) problem' (largely about timber/forest managerialism). The third site is in Chapter 5, where the various threads across the thesis are drawn together and a small number of examples of what ought to be are put forward.

The ethical, political and theoretical perspectives of this thesis

Underlying much of the discourse and devices put forward in this thesis is a commitment towards theorising on ways of knowing and of critiquing nature as other that is drawn from eco-feminism. These understandings echo throughout this thesis. There are further views contributing to this work, most notably from political ecology (Atkinson 1991) and from

de-centred ecologies (Whiteside 2002), although these are not particularly evident.

Feminism and eco-feminism

Feminism, in its broadest sense, is advocacy towards understanding women's lives alongside the promotion of women's rights:

> …it highlights and examines gender [and sex] divisions within society, and regards such divisions as political rather than natural (Heywood 1992: 220).

It is not only a form of inquiry into the way the world is, but a social movement and a diverse set of ideas surrounding the recognition of the subjugation and domination of women (by men - notably as patriarchy),[25] and which has over time come to include other forms of domination (such as class inequality). It is an eclectic and historically diverse set of social movements that dates from the late 1700s, arising most forcefully in Europe, Australasia and North America but essentially global by the 20th Century. As an ideology and a way of knowing the world it has numerous components, including but not restricted to: liberal feminism; socialist feminism; radical feminism; feminist geography; feminist psychoanalysis; and, eco-feminism, which are in places mutually exclusive and in tension with each other (Heywood 1992; Crotty 1998; Bullock and Trombley 1999)[26].

Arising in the 1970s, ecological feminism (or eco-feminism) draws together aspects of feminism and of the green movement generally, while presenting particular critiques back at both of them. It tends towards the radical end of the green perspective, as much as one can be said to exist, by stating that human inter-relations with nature need to be thoroughly re-configured on the basis that humans and nature are

[25] Clearly, the social movements, 'ways of understanding the world' and ideological components are holistic in differing spaces and places, so this short review can-not do justice to the complexity expressed under the rubric of (eco-)feminism and it is recognised that the divisions outlined in the rest of the paragraph are potentially misleading and evidence of categorisation and control issues (within a masculinity).

[26] As a male and identifying with masculinities, I am in tricky territory discussing and utilising (eco-)feminism, as some contributors to the field would dislike or quite legitimately resist my positioning here. I certainly intend no disrespect and believe that there is considerable space for gendered communication and entwining. That is gender, in being significantly culturally and socially constructed, can to a reasonable extent be altered and re-defined towards more meaningful and generic spaces, but most definitely aimed towards overcoming elements of dysfunction within masculinities (see White 1989; Horrocks 1994).

essentially one, currently an understanding denied across important parts of the Western world (Mellor 1997). It extends the critiques found in feminism, for instance, of sexism, classism and racism, to include naturism, which may be thought of as the denigration, exploitation, domination and unjust relations over (non-human) nature (Warren 1996). Like feminism generally, there are differing eco-feminisms reflecting different ways of understanding human-nature interrelationships[27].

Two aspects drawn from eco-feminism are important for this thesis. First, how nature and allied objects are conceptualised within a system of oppression, or, within an unfavourable ideology; second, that of critiques of what it is to know.

Plumwood (2002) theorises that the ecological crisis of our times has been strongly driven by a rationalist doctrine, a doctrine which at its heart has a number of dualisms, but most particularly here that of human/nature, nature/culture and subject/object. It is not reason *per se* that is being critiqued, but rather a very narrow type of reason that privileges the mental, conceptual, and analytical, over the embodied, corporeal, and emotional:

> …rationalism is a doctrine about reason, its place at the apex of human life, and the practice of the oppositional construction in relation to its 'others', especially the body and nature, which are simultaneously relied upon but disavowed or taken for granted (Plumwood 2002: 18).

The doctrine of rationalism incorporates a view of humans, notably men, as outside or of standing masterly over nature. Physically, humans are recognised as part of nature but this does not extend, as Plumwood (1996) notes, "…[to] the essentially or authentically human part of the self…" (p. 162). Women are conceptualised as being close to nature and are caught up and associated with nature as other or as an object (for control). This involves networks of association, material realities and of power, perhaps best discussed as: "…networks of social boundaries that delimits, for all, fields of possible action" (Hayward

[27] Eco-feminism has its critics and Hay (2002: 87-93) gives a good account of some of these.

2000: 27). These operate through entrenched worldviews to de-value and subordinate that which is understood as other or object: women, children, indigenous peoples, nature, *etc*. Hay (2002) neatly sums this up, by stating that:

> …the key mechanism of patriarchal domination is not overtly institutional; it is, rather, engrained within our most fundamental perceptions, and all the more difficult to combat by virtue of its non-tangibility…[and this]…patriarchal conceptual framework is inherently dualistic…[It consists of]…opposed pairs of values and interests, corresponding to the gender division itself, in which the 'male' interest/value is accorded superiority…[These]…masculine values are graded as 'species-defining', whilst the feminine is marginalised and trivialised. This has lead to the categorisation of women and values associated with the feminine as 'other'…(pp. 73-74).

The dualisms represent a particular socio-cultural worldview that evokes, displays, deploys and mediates a privileged side to each dualism, disappearing the alternate. Nature (and signifiers of it, such as women, children, indigenous peoples), as an alternate dualism (being the other or object), is stripped of agency and is left latently awaiting transformation into the project of human (patriarchal, capitalist) development. Ideas, rhetoric and conceptualisations surrounding these dualities all come together through a particular worldview and render nature mute, no matter that it is active. On such is modernity currently structured and on such are the ecological constraints to our existence denied (Clark 1995; Warren 1996; Plumwood 2002). This process, as mediated within a network of social boundaries that delimit possible action, can be said to be at work in the forestry milieu and its research into private forest landowners and forests. This thesis depicts how this occurs amongst the reviewed cases from the literature.

The second aspect that eco-feminism provides for this thesis is its critique of how we know. It draws on feminist critiques of science, technology, development, and most particularly on feminist epistemology. These are an important part of (eco-)feminist thinking, initially rising with investigations into the denial of women's voices within science, and eventually moving to incorporate general critiques of science itself (Keller 1992). At the core of such understandings is the

idea that science produces certain kinds of knowledge-claims that are more strongly legitimated then other equivalent knowledge claims, and in doing so supports and promotes systems of dominance and subjugation (Lennon and Whitford 1994).

One facet of this process of privileged knowledge and domination in science is found in reductionism. Characteristics of reductionism that are considered problematic by some eco-feminists are the breaking down of a system into sub-components, which reflect the basic parts of that system, these are linked together by patterns of uniform cause-effects and are usually explained or envisioned though mechanistic metaphors. This process allows a system broken into parts to be shorn of any connectivity to values, context or embodiment, as the overarching epistemological and ontological framing insists on a form of personal detachment that qualifies the knowledge generated as a (certain kind of) legitimate objectivity. The criteria for this process are such that it is effectively only obtainable by experts central to the process, and all others are relegated as other, non-specialist or at worst ignorant (Shiva 1993; Plumwood 2002). This has consequences to what can be known. The literature reviewed is replete with this kind of approach, as is discussed in Chapters 3, 4 and 5.

It needs to be noted that feminist epistemology can be discussed in two differing ways: (1) as women actually knowing differently to men, so accessing a very different epistemological framing than men (and largely requiring one to be a women to undertake it); or (2) as feminine theorising of ways of knowing differently to that of the masculine (Crotty 1998). This work is orientated to the latter; in other words, one does epistemology as a feminist. The epistemological framing does *not* have to contain feminist or gender related content in order to qualify as a feminist tract (Longino 1991), which is largely what happens here. A feminist epistemology has been used to structure this argument, even though it is not overtly obvious. Therefore, there is an implicit commitment throughout the epistemic analysis herein to such feminist goals as social change and emancipation (Lennon and Whitford 1994).

To pull all of this together, eco-feminism provides ethical, political and theoretical insights and guidance towards investigating the reviewed literature and also acts as a signifier of this author's use of normative theorising within a critical realist framework. A specific focus on the subject/object, human/nature, nature/culture dualities are utilised to critique much of the commitments to shaping the world and apparent domination and subjugation of those researched that are evident from within the reviewed literature. On the other hand, an epistemic analysis, motivated by feminist ideals of diverse epistemic practices, is used to explore the significant incapacity of the reviewed literature to provide complex accounts of the world. These are all incorporated together into the idea of an irrational rationality, drawing from Longino (2002) and elements from Plumwood (2002), being at work within the reviewed literature as a whole, thereby restricting the capacity of forestry science to be a more active and beneficial component of the lives of people. A number of issues from eco-feminist engagement with ecological science (notably Warren and Cheney 1996; Zabinski 1997), alongside issues around a relational ethics rather than a rights based ethics, underpin reflection herein on where forestry science could go into the future.

The usability of feminism and eco-feminism in this thesis is connected to its significant strengths and arguably prominent position within the many forms of ecological thought that are attempting to moderate, mediate or overturn the currently dominant form of modernity (Hay 2002). As noted earlier, feminist epistemology and the critique of duality (especially human/nature, nature/culture and subject/object) as well as hierarchy are central aspects drawn upon to structure this thesis.

This whole thesis is delicately balanced between the technique unfurled in analysis (and synthesis) against the central effort to incorporate robust ethical and epistemic engagement drawn from eco-feminism. The effort to shape an argument and technique herein that does not overtly criticise one way of knowing from the standpoint of another is *directly* countered with these radical and deliberately critical

systems. Reflecting on and attempting to chart this tension is a necessary part of coming to understand how it may be possible to open a dialogue within research about private forest landowners that is to the benefit of a larger number of people and to the way in which we interrelate to nature.

As has been noted, this thesis posits that researchers shape the researched and nature (as other or object) in such a way to render them sub-ordinate within what is effectively an 'oppressive conceptual framework' (after Warren 1996), although this terminology is not used. This author is assiduously trying to avoid the judgement that researchers of private forest landowners are *deliberately* undertaking such thinking and action. Much of the way we understand the world comes through the material, socio-cultural and institutional structures of our immediate embodiment and longer life-path experiences (Clark 1995). It can be difficult to perceive and break away from these structures as an individual. The thesis embraces and cautiously balances these standpoints between, on the one hand, recognising the legitimated and consistently re-produced patterns of behaviour and thought that constitute research on private forest landowners today and, on the other hand, the potential for changing that thinking and action for the better through insights emerging from eco-feminism.

Finally, these positions sit well within a critical realist framework as they exemplify the possibilities associated with people as language-users and creators of meaning who can alter (and are altered by) their social and physical environments with great range and depth, thereby focusing transformations of acting, of becoming anew, and of thinking as all latently available and essential features of human existence (Sayer 2000). Further, feminist epistemology sits comfortably with an ontologically realist and epistemologically diverse framing (see Mellor 1997), so equating well with the commitments found in critical realism.

Theorising science

What is science? This is an important question for this thesis, but one that needs to be put in place with brevity – a difficult task considering

the complexity of the question and the likelihood that there is *no* firm answer (Eflin, Glennan and Reisch 1999; Resnik 2000). Here, science will be written about as being, at least partly, a belief system. In other words, science is shot through with the social (Morrow and Brown 1994).

As has already been stated (Bhaskar 1989 –this chapter), science is a transitive process with the intransitive as its object. Here, this will be discussed by saying that:

> …scientific work is done by a socially structured community of men and women. The science we consume, so to speak, is the final product of the complex interplay of social forces and cognitive and material practices (Harré 1986: 8).

In order to produce a basic analytical structure to guide this thesis during the practice of disassembling and reassembling the case literature as an account of scientific knowledge, the work of Duran (1998) and Longino (2002) have been draw on.

Longino (2002: 1) presents a theory of the social character of scientific knowledge called 'critical contextual empiricism'. Godfrey-Smith 2003 gives an excellent definition of this as:

> …a form of empiricism that emphasizes the role of social interaction. Longino argues that in order to be able to distinguish rationality from irrationality we should take the *social group* as our basic unit. Science is rational to the extent that it chooses theories from a diverse pool of options reflecting different points of view, and makes its choices via a critical dialogue that reaches consensus without coercion. Diversity in the ideas pool is facilitated by diversity in the backgrounds of those participating in the discussion. Epistemology becomes a field that tries to distinguish good community level procedures from bad ones (p. 142).

So, Longino (2002) emphasises that science is a practice, and a practice undertaken within social (notably community[28]) contexts as much as cognitive (personal) ones. Knowledge in this situation is defined as where content (*i.e*., some-thing) is granted acceptability as epistemic (that is admitted into knowledge) by a community at a particular time in

[28] Community here can be thought of as: "…a concrete grouping of interacting persons who are morally integrated by a set of relatively stable social institutions. These institutions and the persons manning them are set in an ecological nexus of material processes…[individuals in local community settings are]…both a *social product* and a *producer of the social*" (Harvey 2002: 183-184 – italics are in original text).

a particular context. For this acceptance by a community it has to be supported by data evident to the community, data which has been arrived at through reasoning buttressed by critical scrutiny across the community and in light of community goals. Critical scrutiny involves legitimate avenues of criticism, uptake of criticism, public standards and relative equality of intellectual authority (Longino 2002: 135)[29].

Two further matters that Longino (2002) specified as of importance are: (1) knowledge has an embodied or artefactual form (*e.g*., mental representations, language, texts, devices, *etc*); and, (2) logic, observational evidence and social interactions *together* are involved in the formation and justification of scientific knowledge. There are (community) norms associated with these processes which are considered appropriate and legitimate towards allowing something to be ascribed as knowledge. For this thesis, two categories, that of the epistemic and the normative are used (as constructed by modifying Duran 1998; Longino 2002).

The epistemic and normative are not equivalent, but neither are they incompatible, as will be explained:

- Epistemic (*i.e*., knowledge/knowledge generation): this is a status given by a community to some content (some-thing) through evidential processes which justify, confirm or fix some (claimed) belief (at some time) as a kind of truth of what is. For content to be usefully put to (research) projects by individuals, requires an individual to accept that a content is epistemic, for the community to accept that a content is epistemic, and for the community to accept the individuals successful securing of the content (when practised) as epistemic. All of this occurs through a number of social channels, involving constant iterations and conversations (including of signs/semiotics) of two or more people.

[29] This allows for multiple ways of approaching knowledge production in regard to the same 'process of phenomenon'. Any one phenomenon may have differing and incompatible knowledges available for understanding as held by different knowers, contextually embedded in differing ways. The results of all this is that there may be multiple epistemically correct representations for any particular phenomenon, but which of these gets chosen and hence comes to be considered as legitimate knowledge depends on the context (Longino 2002).

- Normative: this is a belief held by an individual, which may or may not be reflected by a community and which may or may not have some evidential process associated with it and which contains an implication on what ought to be. It will *not* have gone through a justificatory process in order to fix it as some kind of truth. For instance, such beliefs may operate within a hypothesis and between the hypothesis and evidence. The meaning of belief here is close to how it would commonly be known, *e.g.*, *x* proposition may be known to be true because it is the word of God.

This author has to take some liberties in stating what might be involved in the epistemic and what might be involved in the normative when unfolding the analysis of the 32 cases (each in themselves a form of knowledge within the forestry milieu). On one hand, some of these epistemic and normative elements were (arguably) identifiable as involved with each other. As an example, an explicit, identified theory (already established as part of some broader epistemic framing), used in a case, could have its attendant ontological and epistemological conditions inferred (which are normative). Some other elements though have a quite different normative feel to them, being independent of any one identified epistemic frame. This creates in this thesis one approach to the epistemic and two approaches to the normative, all emphasised in generalities across the 32 cases. Chapter 3 is dedicated to the epistemic and the normative that is already invested within that epistemic frame while Chapter 4 is dedicated to the normative that appears to be independent of a particular epistemic framing. In a research text, the two are (usually) deliberately brought together. Chapter 5 brings all these elements together in a specific investigation of a single case (that of Young and Reichenbach 1987). The case will be explored through the idea of epistemic-normative interlinks which form part of a textual reality effect that proves the world.

This rudimentary analytic theory (brought together for this thesis) underpins the entire approach to the 32 cases. It was pulled together using *adaptive theory* (Layder 1998), a topic briefly turned to next in

order to set the context for more basic analytic theorising as the thesis proceeds.

Adaptive theory

Elements of Derek Layder's (1998) *adaptive theory* are used to provide the rationale for binding the various theoretical elements together in this thesis. Effectively, due to the complexity of the topic, two primary theorisations are constructed towards the end of the thesis to explain how landowners are known and how scientific texts can be ideological.

Adaptive theory , as used in this thesis:

> …emphasises the *development* of theory which draws on different combinations of different kinds of theoretical and substantive resources and trades on the synergy that is created between them. Similarly, elements of the use of both sensitising concepts and explanatory networks are incorporated and absorbed into the adaptive theory framework. Thus, while in general adaptive theory embraces the search for an explanatory framework, one way in which it does so is by encouraging the use of orientating or background concepts that serve to stimulate the theoretical imagination and further theoretical elaboration…[it]…centralises the interconnections between, on the one hand, actors' meanings, activities and intentions (lifeworld) and, on the other hand, culture, institutions, power, reproduced practices and social relations (systems elements) (italics are in original text; Layder 1998: 26-27).

Adaptive theory is "…broadly realist…" (Layder 1998: 86). This underlies the character of adaptive theory as concerned with actors' subjective meanings but also with the structural conditions which pattern, and are patterned by, those subjective meanings. Notably:

> …there is order in the world itself and that it is this order which social analysis seeks to appropriate or capture in terms of our knowledge (but not in some detached positivist sense)…[though] social reality has intrinsic properties (which are partly humanly constructed), when we analyse it we naturally impose various kinds of linguistic orderings upon it (descriptions, conceptualizations, theories) in attempting to make it comprehendible to us (Layder 1998: 151).

Apart from a rationale for theoretical pluralism, what *adaptive theory* brings most clearly to this research is that:

1) hidden assumptions which may affect research outcomes are more generously revealed;

2) there is a rejection of adherence to either strong naturalism (essentially that the social can only be adequately understood using the standards and/or techniques of the natural sciences) or strong anti-naturalism alone; and,
3) ontology is prioritised over epistemology, that is the choice of what (is) reality defines epistemological questions of validity.

The last two points are the most vital, as they suggest that the statement; only the rational sciences (*i.e*., natural sciences) can be valid, is incorrect. Further, they enable wider understandings of what can be rational to be incorporated alongside stricter, law-like statements about what is real, as in remnant-positivist research (a concept which will be explained in the next chapter).

In the final analyses, *adaptive theory* encourages a realisation that research is messy with contested areas and places of confusion. So theory should not be seen as some absolute guide or arbitrary system of rules, but rather as a flexible and at times disposable tool for coming to an appropriate answer or condition. This should promote the opening up, rather than the textbook closing down of theoretical avenues. Here, an effort is made to incorporate competing discourses so that they: "…cease to be regarded as sacrosanct, monolithic and self referentially true" (Layder 1998: 39), even if this means modifying (as much as is possible) individual discourses. Due care though must be paid to the "…inconstancies and incompatibilities…" between discourses (Layder 1998: 40).

Structure and findings of this thesis

This thesis sets out to support, through an assessment of the literature, the assertion that researchers in the forestry milieu who study private forest landowners are largely committed to a single research rationality that has particular epistemic and normative characteristics which severely restrict the way that landowners (and their inter-relationship with forests) can be known. This is done by first, in Chapter 2, discussing and tidying up some of the conceptual confusion around the concept of

private forest landowner in the forestry milieu literature. The results of this clarifying step are the provision of a concept of private forest landowner that anchors its usage for the thesis. This assists in the identification of general topic areas covering private forest landowners, of which eight are detailed. One of these, goals and objectives of landowners, was chosen to reduce the large number of cases to a manageable core for analysis. Thirty-two cases are selected from within that topic area and briefly described as to date of publication, author/s, title and country of origin, in preparation for the third chapters focus on what components of fixed belief go together to achieve a particular knowledge outcome (in a text).

Chapter 3 details how one knowledge system is dominant. It does this by breaking each case down into seven major categories (with innumerable sub-categories) that are standard parts of research, such as concepts, theories, research designs, methods, or are normative systems that background research practices, such as ontologies, epistemologies and axiologies. It is found that there is a great deal of similarity in the sub-categories of all seven major categories across thirty of the cases and that a reasonable argument can be made that this essentially represents one knowledge system. Also evident in the cases is a particular normative commitment, the NIPF problem, that is dealt with in the fourth chapter.

Chapter 4 shows how an unfavourable normative commitment called the NIPF problem is strongly evident amongst the cases. On the surface, the unfavourable norm does not look so unfavourable. It involves researchers noting that private landowners do not contribute their share of timber production to society or are failing to manage their forests correctly, for one reason or another. The NIPF problem changes over time in the literature, notably in terms of a focus on what is being done with forests (*e.g.*, harvesting timber, improving ecological health, *etc*), but an ethic of intervention in forests (*i.e.*, managing) via the guidance of foresters is a constant, appearing relatively stable in the literature over time. It is suggested that underlying this ethic is a social good predicated on the particular historical and professional role people in

the forestry milieu see themselves as having, mostly focused on conserving and shaping forests for a national good. It is a role though that is imaginatively restricted by broader worldviews evident in the West, through ideas such as ‘economic development guarantees human development’ and ‘bureaucratic systems are the most effective for controlling (society and) nature’. Alongside this is predilections towards treating landowners in research a little like trees - a constant distancing process is evident in a majority of the cases which de-personalises landowners substantially. Further, the depiction of the inter-relationship of landowners and nature is one dimensional and reduces nature to something that is acted upon and which hardly ever acts back (on landowners or for that matter on researchers). Chapter 4 draws to a conclusion by discussing the outcome of the single knowledge system as mixed with the NIPF problem once translated out into the world. This is where the idea of unfavourable most obviously comes into play. The combined epistemic and normative system, dominant across the cases, means that it is not possible to build diverse understandings of complex socio-material systems in comparison to what is available more broadly across the sciences. This lack of diversity leads to a failure of imagination in dealing with complex socio-material systems, whereby those using the research outputs face restrictions on understanding landowners that reverberate back in how landowners understand the utility and value of forestry science. In order to finalise this point, it is necessary to actually depict how the epistemic and norm of the NIPF problem come together, something quite difficult to do with the generalised results from this and the preceding chapter. It is the task of the final chapter.

Chapter 5, using a single exemplary case (of the majority of the cases investigated) details how the norm of the NIPF problem comes into the epistemic and then how this emerges as a unified result which seemingly represents how landowners really are. It is then described how this might be considered as ideological in certain contexts and why it can also be considered an unfavourable ideology when considered as a single research rationality. This unfavourable aspect derives from the problematic ethics of the NIPF problem and the extent to which diverse

ways of knowing are bound-out by the dominance of the single research rationality when contextualised against the bulk of the cases reviewed. This problematic ethical and knowledge situation makes the research rationality irrational.

◆ ◆ ◆ ◆ ◆

2 | Literature described:
THIRTY-TWO CASES EXAMINED

This chapter outlines who private forest landowners are, the general structure of the reviewed literature, why the particular thirty-two cases of literature were selected, what they are about, where they came from and what the sub-topic area was that each emerged from.

Who are private forest landowners?

Conceptualisation is not well attended to in the literature on private forest landowners, which is a problem when the most common research frame in the literature is a kind of positivism, and this will become more evident in Chapter 3 (note too that an eco-feminist perspective would heavily critique the type of conceptualisation utilised in this chapter by this author to define private forest landowner, but it is more important to replicate the type of conceptualisation common to the literature cases than to critique it at this stage). This lack of conceptual clarity is also the case with the actual research subjects: private forest landowners. One of the most common concepts used to describe them, Non-Industrial Private Forest (NIPF) landowner, is generally poorly defined. Further, there is more than one primary concept used to define private forest landowners. Finally, when such landowners are defined it is usually with little attention to the actual diversity of those so labelled.

This confusion stems from the multiplicity of terms surrounding the primary concept (of privately owned forest), a general lack of definitional clarity within the literature, infrequent use of definitions, interchanging of terms and meanings between different forestry discourses and the difficulty of trying to compress what is a complex set of relations into a readily useable concept (in a remnant-positivist framework[1]).

This sub-section: (1) briefly explores the conceptual diversity surrounding private forest landowners, notably focusing on NIPF landowners and farm forestry; (2) explains why the preferred usage in this thesis is 'private forest landowners'; and, (3) defines private forest landowner for the reader.

Private forest landowners: A lack of conceptual clarity

There is diversity in the literature over the conceptualisation of 'people who have private property rights over forest' (Wiseman 2003). There is nothing wrong with such diversity, except if there is little definitional rigour. Unfortunately, this is the case here as a lack of definitional rigour would appear to pervade the literature generally, with few exceptions (*e.g.*, such as van der Ploeg and Wiersum 1996). Amongst the many concepts used, that of non-industrial private forest landowner dominates the broad literature while farm forestry is the primary concept in Australia.

In the broad literature on the topic, the following concepts all appear in reference to roughly the same idea of people who have private property rights over forest:

[1] Remnant-positivism is a name for a theory of knowledge (an epistemology) that researchers may use in order to understand what science is and what guides them in practice. It is often understood not as a formal set of propositions or statements, but rather as an implicit set of understandings about what is true. In other words, the way it is being used here is as a label for how researchers may be understanding how they know what is (real). Simplistically, positivism is where the only knowledge is sense-experience as determined through a special kind of linkage between an observation language and a language of theory (Duran 1998). The word remnant modifies positivism, as past epistemological positivisms are no longer explicitly adhered to or worked with, but as no other equivalent epistemology has replaced or superseded it, 'remnants' continue to this day. It is more honoured in the breach than the observance by many researchers, so to speak.

- agroforester;
- farm forester;
- non-industrial private forest (NIPF) landowner;
- private forest landowner (PFL);
- private property (PP) forest owner;
- small forest owners (SFO); and,
- small-scale landowner.

The two most common are NIPF landowner and farm forester. They have been directly defined by van der Ploeg and Wiersum (1996). NIPF landowners are people who own forested land, but who do *not* farm it or draw the majority of their income from on-property agricultural activities. They tend to be either ex-farmers who have changed the source of their income to off-property activities or urban people who have purchased land for recreation or investment. Farm foresters are people who own forested land, draw the majority of their income from on-property agricultural activities and use their forests to support other agricultural activities to supplement income when needed[2]. Although these two concepts appear to be exclusive, this is not entirely the case and to some extents farm forestry can be understood as a sub-concept within the concept of NIPF landowner.

Part of the problem with differentiating between concepts is that the usage shifts across nation-states, possibly reflecting the history of the forestry milieu in each. The majority of literature drawn on for this thesis is from North America where NIPF landowner is commonly used and tends to incorporate the meaning of farm forestry. Farm forestry by itself is not much used in the North American literature. Out of the reviewed literature, for instance, definitions of NIPF landowners include:

> …non-industrial private forests (NIPFs) are those forests not in public or industrial ownership. They are the woodland of farms, ranches, and vacation property. Rarely are they managed

[2] For van der Ploeg and Wiersum (1996), both NIPF landowner and farm forester are contained in the concept of Small Forest Owner (SFO). These are: "…forest owners, for whom forestry forms only a partial activity within their total livelihood system and whose forest management objectives are not predominantly orientated to industrial timber production" (p. 45). To some extents, it might be held that the NIPF concept covers the SFO concept.

> professionally for forest products (Gramann, Marty and Kurtz 1985: 347);

and,

> NIPF owners are defined as private forest owners who do not own or operate wood processing facilities, and include farmers, miscellaneous individuals, and non-forest industry corporations like banks, insurance companies, and the like (Bliss, Nepal, Brooks and Larsen 1997: 37).

In Europe, the definitional range is broader, with NIPF landowner, farm forester, small forest owners and small-scale landowner being used, for example. Even amongst these, there is still a sense of some definitional ambiguity, for instance:

> …NIPF owners, however, form a heterogenous group, consisting of farmers, workers, officials, town residents, and pensioners (Lönnstedt 1997: 302).

As will be evident from the above three quotes, farmers are incorporated into the concept of NIPF landowner and not separated out as farm foresters, yet in van der Ploeg and Wiersum's (1996) quote, for instance, a separation is made (within the concept of small-forest owner).

In Australia, the term farm forestry is more commonly used than the term NIPF landowner, nor any of the other concepts. It is often used to mean something similar to:

> …the practice of establishing, tending and marketing forest products grown on cleared agricultural land in such a manner and in such configuration as to be complementary to traditional agriculture (Inions 1995 in Stewart and Hanson 1998: x).

It is often used interchangeably with the concept of agroforestry (Race 1999). Agroforestry is:

> …the cultivation of trees for commercial use on farmland in association with crops, pasture or livestock…(RAC 1992: 258).

There is though, a degree of conceptual disagreement about the concept of farm forestry and a number of competing definitions have emerged over time (see Cummine 2000). For instance, Robins, McIntyre and Woodhill (1996) take a, "….more holistic approach…" (pp. i-ii) and define farm forestry as:

> [t]he incorporation of commercial tree growing into farming systems. It can take many forms: plantations on farms, woodlots, timberbelts, alleys and wide spaced tree plantings [and the

> authors add] as well as on-farm native forests. The key point is that forestry is part of the farm enterprise; that is, a product from the trees is harvested and sold. Wood is typically the main product, but there is also the potential for non-wood products such as nuts, seeds, oils and foliage (p. 3).

Robins, McIntyre and Woodhill's (1996) quote would easily incorporate more general versions of the NIPF landowner concept.

The two concepts of farm forestry and NIPF landowner and their similarities and differences are summarised in Table 2.1.

Definitional category	Farm forest(ry)/(ers)	NIPF landowner
Source of majority of income…	on property	off-property (but implied as 'on' in those depicting a farmer category)
Form of land production or use: Type I…	agricultural	any (including agricultural)
Form of land production or use: Type II…	timber harvesting/processing	no or little timber harvesting, generally
Form of social organisation…	agricultural enterprise, implied as organised through the family (in the farming designation)	family (individual), non-forestry industry, agricultural enterprise

Table 2.1: Concepts of NIPF landowner and farm forest(ry)/(er) compared

What is evident from Table 2.1, is that there is a degree of definitional differentiation between the two concepts, especially with the third category (what has been defined here as Type II land production) that involves timber harvesting/processing. Regardless, the concept of NIPF landowner can accommodate the concept of farm forestry within its boundaries without much difficulty, although the reverse is not the case.

The reason for the conceptual existence of farm forestry may arguably have more to do with the history of the forestry milieu, with its strong focus on timber harvesting and management (that is readily translated into agricultural contexts) than with any real need for a separate concept[3]. Regarding private forest landowners, and on the basis of

[3] This understanding of farm forestry (given by this author) is simple and fixed, as farm forestry in Australia also incorporates the revegetation of degraded farmland while attempting to make such activities financially viable. Also, the goals of farm forestry activities in the world are under consistent and short term (social) change.

the existence of the farm forestry concept in the literature, one could just as readily posit the existence of an amenity forestry or a preservation forestry concept within the literature (even though there are none and they sound rather absurd in the current context of the forestry milieu).

As noted in Chapter 1, this thesis focuses on broad concepts over narrow which effectively means that literature on farm forestry has been put aside (see for example, Emtage and Specht 1998), unless the focus was broad in practice (which was the case for Wilson *et al*., 1995, which is included in the thirty-two cases reviewed herein).

Why 'private forest landowner' is the preferred term in this thesis

Non-Industrial Private Forest (NIPF) landowner may be one of the more common, if not the most common concept used in the literature, but it is bedevilled by the rather dismissive use of 'Non-Industrial'. Finley, Jones, Reed, Jacobson and Glover (2001) point out that:

> [t]he 'non' name says to private forest landowners, 'You are second rate - a step below industrial' (p. 48).

So, rather than using NIPF landowner or farm forestry this report follows Finley *et al*., (2001) by referring to NIPF landowners and farm foresters collectively as private forest landowners[4].

Wiseman (2003) has suggested the term 'family-owned forests', for similar reasons to Finley *et al*., (2001). This was considered, but a potential problem here is that many family-owned forests are controlled by individuals and some of these will not see themselves as constituting a family (even if technically they do). In other words, it is an academic term applied in such a way that it may not sit at all well with those it is applied too. Further, it then sits alongside the concept of public or state

[4] Finley *et al*., (2001) meant for the term private forest landowners to be one part of a forest ownership typology built in terms of 'public', 'industry' and 'private'. Finley *et al*., (2001) seems to have structured categories in terms of a forest management system (*i.e*., industrial) and property regimes/rights (of private and public). This is not the case for the definition of private forest landowner herein, which includes the categories of public, industry and private. The rationale behind this step is that it is the system of tenure or rights that is the primary locus upon which the system of management and the social organisation or form of capitalism rests upon, so it should be the consistent central linkage between these differentiated systems.

forests which is linked to the type of land tenure and it is this concept (of property rights) that more adequately sits at the core of understandings about forest ownership (at least in a basic sense). Further, small-forest owner (used by van der Ploeg and Wiersum 1996) as the primary naming, could also be considered to contain negative connotations over the word 'small' and for some landowners such a naming would be resisted (especially amongst those with substantial holdings). Hence, this author utilises private forest landowner and simply notes that the institution of the family makes up the majority of private forest landowners (in total numbers) and is a central focus herein (*i.e.*, this thesis focuses on literature informing the study of private (family) forest landowners).

At various points in this thesis, direct quotes from the literature are used. When this occurs, the text written by this author referring to such quotes utilises what-ever concept is used in the direct quote. In all other occasions, the concept of private forest landowner is used.

The private forest landowner defined

The (sub-) concepts that make up the primary concept of private forest landowner are depicted in Figure 2.1, with descriptions below of those in an unbroken circle.

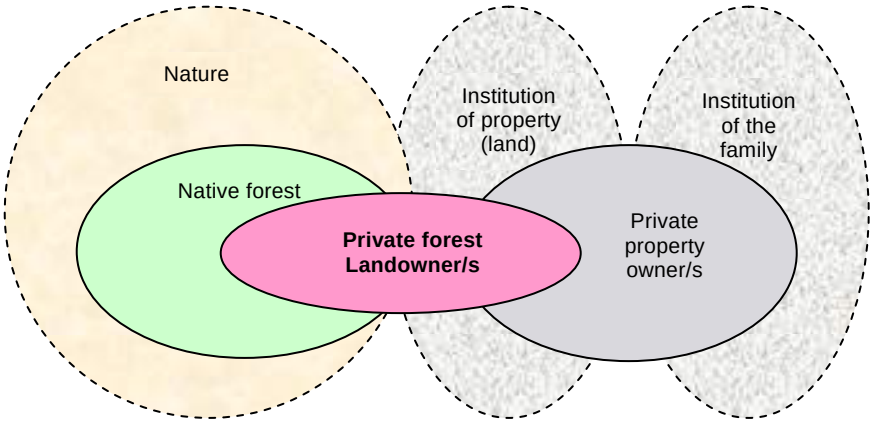

Figure 2.1: Basic relationship of concepts to each other

The definition deployed here is based on the Australian context and has been constructed at least partly in subservience to how nature is gen-

erally conceived in the forestry milieu (as dualistic, *i.e*., culture/nature or human/nature)[5]. It also echoes a conceptualisation process linked to remnant-positivism (no matter its potential problems). This is a tentative description, as a more wide ranging debate needs to occur across the forestry discipline about just who are private forest landowners. The arrangement presented here is focused upon clarifying who this author believes are being discussed. It draws from van der Ploeg and Wiersum (1996) whose excellent work presents a good definitional array.

Two primary concepts go to make up the over-arching concept of private forest landowner (with an Australian-centric focus):

1) (Native) forest: this is a material life-form (with living and non-living components) and an independent objective reality, as nature separate from people. This study concentrates on native forest - that is forest which is dominated by trees indigenous to Australia (or in terms of the literature reviewed; the nation-state in which the research was conducted). It will be defined here as a structural classification of vegetation involving life form and height of stratum, described as:

   > ...an area, incorporating all living and non-living components, that is dominated by trees having usually a single stem and a mature or potential mature stand height exceeding two meters and with existing or potential crown cover of overstory strata about equal to or greater than 20 percent (National Forest Inventory 1998: xix).

   Note that this definition also covers the class of vegetation known as woodland. There are a number of different forms of native forest, and herein there is a focus upon remnant and remaining native forest rather than plantations, for instance.

2) Private property owner: this is a person, group or organisation that, in regard to alienated land, holds freehold or leasehold tenure with title. They are partly shaped by (but who also shape) interaction with the institution of property and specifically within that of a private

[5] Such conceptualisations as discussed in this chapter and the following chapter are heavily criticised from within (eco-) feminism. This is acknowledged, but as noted in Chapter 1 this thesis, especially in the central three chapters, attempts to reserve direct criticism of the forestry milieu and the epistemic frameworks used and to keep as close as possible to the primary epistemic framings used in practice.

property regime (Macpherson 1975; Hargrove 1989; Hanna, Folke and Mäler 1995). They are also defined by their primary mode of social organisation, involving the categories of family, corporation (business entity), indigenous, nation-state and civil society. This study concentrates only on social organisation relating to the (institution of the) family and to business entities that are clearly linked to a family unit of some kind.

i. Private forest landowner: a *private property owner* with *forest* on that land which they also have private property rights over (although this is under some change currently as the nation-state redefines these rights over vegetation in light of the issue of sustainability). There are two sub-categories here. One is that of the forest governance system, the second, that of socio-economic and cultural reproduction:

   a) Forest governance-system: There are four different types of governance system: large (industrial) scale, co-managed, community and small-scale (adapted from Beckley 1998). These describe a bundle of similar attributes which help explain the primary way in which people govern their interaction with forest. There are few co-managed or community forest systems in Australia. Nearly all private (family) forest landowners can be grouped into the small-scale forest governance-system (depicted in Table 2.2 on p. 48)[6].

   b) Socio-economic and cultural reproduction: This concentrates on the idea of lifestyle: "…a distinctive pattern of personal and social behaviour characteristic of an individual or group" (Veal 1993: 247) and has two tiers as reflected upon here: (1) that of 'making a living' - in which the property is either the majority source of income or significantly supports a wage obtained external to the property; and, (2) 'making a lifestyle' - where the property is a support to a way of life (*i.e.*, provides firewood, a space to walk upon, a sense of

[6] To some extents the governance system lies beyond this concept of PFL and rather with the concept of private property owner and outside of it as well.

nature preserved, *etc*). These are not mutually exclusive, but generally there is a distinction posited based on the extent of social structural influences on the forest-scape. In making a living, it is difficult to avoid the demands required by capital, which is largely divorced from a socio-ecological rationality, and so impacts on the local bio-physical systems may be high. In making a lifestyle, although clearly socio-structural influences exist, their immediate and forceful impact on person and forest is potentially less than direct on-property engagement with capital.

Component	Small-scale forest governance system
Rights structure	Mainly freehold, minor public (lease)
Scale of geographical activities	Very small to small (at most, regional)
Amount of land held	Very small to middling (up to low thousands of hectares)
Access	Heavy restrictions, essentially identified small group or individual access only (excepting identified agents of the nation-state)
Locus of decision making control	Locality, household, individual
Structure of decision-making power	Individual or consensual (in group or family), although increasingly nation-state involvement (some would say encroachment)
Scope of ownership, use or management objectives on single land parcel	Nil to very broad, potentially covering the gamut of human experiences with forest
Knowledge base used for management	Largely local: essentially nil knowledge, through personal experience to small (cultural) group, and at most institutionalised in formal agricultural knowledge/s.
Form of production system (when used)	Small scale: portable sawmill, hand held equipment and similar (although possible for harvesting contractors to be brought in who could use heavy equipment)
Form of labour	Human (strength) and light machinery
Scale of material output	Very small to small

Table 2.2: Small-scale forest governance system (drawing from Binkley 1998; Race 1999)

Here, the private forest landowner concept absorbs NIPF landowner and farm forest(er)/(-ry) in a similar manner to how van der Ploeg and

Wiersum's (1996) small-forest owner concept contains NIPF landowner and farm forestry concepts.

Finally, this concept of private forest landowner is used as a benchmark for assessing who a piece of research was investigating and so if it was to be included or not in the analysis undertaken for this thesis.

Description of the selected literature

Using the boundaries established for this thesis (discussed in Chapter 1), the general literature was broadly examined looking for empirical studies on private forest landowners. Much of what was found could be rudimentarily grouped into eight major topic areas, with some minor overlap between them (see Appendix 3 for more detail):

- 'broad-scale' approaches;
- comparison between forest landowners and non-owners;
- farm forestry (strong plantation focus);
- information and knowledge transfer;
- management plans (and planning);
- objectives or goals of landowners;
- personal identity; and,
- timber production and management.

As a general summary, across the eight major topic areas of the literature, there is a definite patterning based on the nation-state that asserts a controlling influence over forestry on both private and other lands in many OECD countries. The forestry milieu in a number of the OECD countries has a strong applied research agenda, long-standing and organisationally sophisticated forest industries and education systems. There is a strong production or managerial focus to much of the literature, with particular flavours based on the peculiarities of each country's forestry milieu. Further, much of the literature comes from Western Europe, Northern Europe and the United States of America where there are widespread private land holdings. There is little literature from Australia or New Zealand, at least partly due to the concentration of production in state (public) forests, although private forest is not scarce.

Further, much of the reviewed literature is statistical, objectivist, remnant-positivist and focused on prediction, reflecting a general comfort with naturalism[7] from within the forestry milieu (*e.g.*, see for example Hickman 1984; Hyberg and Holthausen 1989; Henry and Bliss 1994; Cleaves and Bennett 1995; Kuuluvainen, Karppinen and Ovaskainen 1996; Brazee and Amacher 2000; Egan, Gibson and Whipkey 2001). This point will be returned to later in this discussion.

Selection of literature

Thirty-two pieces of literature (cases) were selected for detailed analysis (Table 2.3 on p. 52). There are three issues related to this.

1. Which of the eight topic area/s defined above came to be focused upon?
2. Why thirty-two cases?
3. Why this particular thirty-two cases?

Topic area focused upon?

The topic area that came to the fore is that of 'objectives or goals' of landowners. The topic areas of 'management planning', 'timber production' and 'farm forestry' are, by and large, too narrowly focused in comparison to 'objectives or goals', while 'miscellaneous broad scale', was too wide, dealing with aggregated (structural variable) data across very large areas (*e.g.*, states). The topic of 'personal identity' and of 'comparison between landowners and non-landowners' was included, as there was some information on objectives and goals. There is a degree of topic overlap in a number of these pieces of literature and some with a narrower topic focus (such as a farm focus only) have components dealing with objectives or goals. These were included where these objectives or goals were suitably general.

Why thirty-two cases?

The number of cases was more or less predicated on what a basic search of available literature turned up within a reasonable period of

[7] Naturalism: "…the belief that social phenomena are part of the natural world and accordingly amenable to the methods of the natural sciences" (Kincaid 1996: xv).

time for the size of the project[8]. It took around 2 days on average to analyse a case fully and then perform a synthesis (so 32 cases analysed took around 64 days work) The research needed to tread a fine line between having some capacity to generalise to all the literature produced in the milieu on the topic and to understand the phenomenon under investigation as a particular process. Thus analysing only a handful of cases in a field that numbered many hundred cases (over the time period in consideration) would likely make any general comments about the research community difficult, while aiming for say one third of all cases would have placed a heavy time burden on the projects deadlines (100 cases would take 200 days to complete in a thesis project that was only supposed to be a year long). The tactic adopted was to conduct a literature search in such databases as *Current Contents*, *CAB Direct*, *Kinetica* and *Web of Science*, as well as on the internet with search engines and directories. The initial wide set of search terms was narrowed down to a pool of potential cases via the topic area idea discussed above. A further step was to look at all the commonly arising cases and search their reference lists until relative exhaustion of new cases occurred. Next, only cases which were straightforward to find where included (as many cases are in the grey literature of government and private organisations that are notoriously difficult to access), on the assumption that ease of access equates to increased chance of use out in the world. In the end, this left a pool of around 60 cases of which 32 were finally used as determined by the project deadlines.

Why these thirty-two cases in particular?

By and large, the 60 or so cases used represented cases that consistently and repeatedly came up in search patterns (many of the thirty-two cases selected have very similar material presented by their authors in other publications - see Appendix 4 for a listing - where this occurs, only one is cited and used). After the removal of duplicates,

[8] As to the extent of this literature, and the need to contain the pool under assessment, Bliss and Martin (1989), referencing Royer (1981), stated that NIPF landowners "….have been the focus of nearly 200 published surveys…" (p. 601) – note that this was in 1981. For the USA, see also Hodgdon and Tyrrell's (2003) literature review on family forest owners which found 72 cases (63 being between 1982-2002).

overtly similar cases and inadequately referenced or poorly presented cases, 40 odd cases remained and these where ordered roughly based on their robustness of argument/design. The projects time limit was hit at thirty-two cases. The remaining eight or so cases were left aside, although not before a final assessment of their dissimilarity was undertaken, in case they might violate the thesis argument. None did.

No.	Year	Author/s	Title
1	1978	Schuster	Attitudes and activities of private forest landowners in Western Montana
2	1981	Kurtz and Lewis	Decision making framework for non-industrial private forest owners: An application in the Missouri Ozarks
3	1982	Tasmanian Forestry Commission	Attitudes of Tasmanian forest owners to native forest management
4	1986	Brooks and Birch	Opportunities and constraints for wildlife habitat management on private forests of the Northeast
5	1986	Greene and Blatner	Identifying woodland owner characteristics associated with timber management
6	1987	Young and Reichenbach	Factors influencing the timber harvest intentions of NIPF owners
7	1988	Kingsley, Brock and DeBald	Focus group interviewing of retired West Virginia non-industrial private forest landowners
8	1988	Marty, Kurtz and Gramann	PNIF owner attitudes in the Midwest: A case study in Missouri and Wisconsin
9	1989	Blatner and Greene	Woodland owner attitudes toward timber production and management
10	1989	Bliss and Martin	Identifying NIPF management motivations with qualitative methods
11	1991	Blatner, Baumgartner and Quackenbush	NIPF use of landowner assistance and education programs in Washington State
12	1991	O'Hara and Reed	Timber market development from private forests in North-Western Minnesota
13	1992	Bliss	Evidence of ethnicity: Management styles of forest owners in Wisconsin
14	1992	Wilson	A survey on attitudes of landholders to native forest on farmland
15	1993	Egan and Jones	Do landowner practices reflect beliefs? Implications of an extension research partnership

Table 2.3: The thirty-two pieces of literature reviewed and presented in chronological order (continued over)

No.	Year	Author/s	Title
16	1994	Bourke and Luloff	Attitudes toward the management of non-industrial private forest land
17	1994	Broderick, Hadden and Heninger	The next generation's forest: Woodland owners' attitudes toward estate planning and land preservation in Connecticut
18	1995	Egan, Jones, Luloff and Finley	Value of using multiple methods - An illustration using survey, focus group, and Delphi techniques
19	1995	Wilson, Whitham, Bhati, Horvath and Tran	Trees on farms: Survey of trees on Australian farms: 1993-4
20	1996	Brunson, Yarrow, Roberts, Guynn and Kuhns	Non-industrial private forest owners and ecosystem management: Can they work together
21	1996	Kangas and Niemeläinen	Opinion of forest owners and the public on forests and their use in Finland
22	1997	Bliss, Nepal, Brooks and Larsen	In the mainstream: Environmental attitudes of Midsouth forest owners
23	1997	Lönnstedt	Non-industrial private forest owners decision process - A qualitative study about goals, time perspective, opportunities and alternatives
24	1998	Birch, Hodge and Thompson	Characterizing Virginia's private forest owners and their forest lands
25	1998	Jenkins	Native vegetation on farms survey 1996 - A survey of farmers attitudes to native vegetation and landcare in the wheatbelt of Western Australia
26	1998	Karppinen	Values and objectives of non-industrial private forest owners in Finland
27	1998	Kuhns, Brunson and Roberts	Landowners educational needs and how foresters can respond
28	1998	Rickenbach, Kittredge, Dennis and Stevens	Ecosystem management: Capturing the concept for woodlands owners
29	1999	Northern NSW Forestry Services	Private forest management intent survey: Northern NSW CRA Regions
30	2000	Dettman, Hamilton and Curtis	Understanding landholder values and intentions to improve remnant vegetation management in Australia: The Box-Ironbark case study
31	2000	Kline, Alig and Johnson	Fostering the production of services among forest owners with heterogeneous objectives
32	2000	Sinclair and Knuth	Non-industrial private forest landowner use of geographic data: A precondition for ecosystem-based management

Table 2.3 (cont.): The thirty-two pieces of literature

Where was the research conducted?

Out of a total of thirty-two papers reviewed, the majority (twenty-three) are from the United States of America. A further five are from Australia, two are from Finland and one each from Sweden and New Zealand (see Table 2.4 and for more detail see Appendix 5). The lack of European literature is less a reflection of the total amount available and more a reflection of the limited number in English, of which many, being focused on timber harvesting, have little engagement with broadly defined 'organisational or goal' orientated investigations.

Pieces of literature reviewed	Nation-state
1	New Zealand
1	Sweden
2	Finland
5	Australia
23	United States of America
Total = 32	

Table 2.4: Total number of pieces of literature reviewed based on nation-state of origin

What questions were posed?

Although a wide variety of questions were posed by the different authors that either touched upon or delved directly into 'objectives and goals' (see Appendix 5), many of the pieces of literature posed questions about the forest (or property) management practices or attitudes of landowners. More particularly, questions were posed in relation to the difference between managers and non-managers; general planning for management; and, timber, wildlife, ecosystem and remnant vegetation management. Other questions touched upon education programs; stewardship ethic; how the landowners see forest as compared to the public; and, the use of geographic data in management. In terms of the specific questions there is some breadth to them but the variety of topics investigated over the years is quite constrained and shows a

marked concentration on aspects of timber management and production. This is not just an observation that becomes evident in reviewing the literature, but emerges also from some of those who have contributed to it. For instance, Blatner and Greene (1989) note that:

> …virtually all studies of nonindustrial woodlands document owners' objectives and their timber management or sale behaviour (p. 206).

This echoes the general commitment to timber management and/or production that runs through the broader literature. This is not surprising, as the literature is shaped for foresters and allied interests who have traditionally had a strong ethic surrounding timber harvesting/production (Marcin 1995; Lindenmayer and Franklin 1997; Ciancio and Nocentini 2000), amongst other ways of understanding (*i.e.*, valuing) forests (Kanowski 1998).

Now that NIPF landowners and farm forestry have been squared away and private forest landowners put into their place - plus a general description of the thirty-two cases has been given - the analysis proper can begin. This is done in the next chapter by returning to the idea of conceptualisation and investigating the theoretical and research design structure of the thirty-two cases.

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3 | Epistemic analysis:
EMERGENCE OF A SINGLE EPISTEMIC FRAMEWORK

What is an epistemic analysis?

This chapter analyses the conceptual, theoretical, research design, ontological, epistemological and axiological components in the case literature in order to discover their diversity. In building this evidential picture it will become clear that the reviewed literature is conceptually limited, largely a-theoretical, of little epistemological diversity (largely being either abstract empiricism or remnant-positivism), and which suffers from problems in securing the link between the probable epistemological frame and the actual practice. All of the above is articulated through the idea of an 'epistemic analysis' (note there is some similarity between such an analysis and the idea of paradigm, after Kuhn 1996, although this epistemic analysis approach is a simpler and less powerful idea).

Herein, epistemic is taken to mean: "pertaining to knowledge" (Mautner 1996: 174), which is in comparison to epistemology, being the philosophical theory of knowledge, although the two concepts are clearly closely linked. A more expansive definition of epistemic here is:

> …the construction of formal models of the processes – perceptual, intellectual, and linguistic – by which knowledge and understanding are achieved and communicated (Bullock and Trombley 1999: 279).

This chapter focuses on the thirty-two literature cases as constituting a single epistemic framework[1] based on and then across particular claims about the way the world is within each case (although determining some of the dimensions of such claims presents significant difficulties). In relation to these systems and claims, epistemic analysis signifies the capture of elements of these across all the cases. The epistemic analysis herein produces a basic outline of how landowners are constructed as a knowledge problem in tension with the socio-material.

Concepts used

In the sciences, conceptualisation is the name given to the process of abstraction and classification of phenomena that secures much of our linguistic communication through shared meaning (Turner 1991; Babbie 1992; Lewins 1992). Conceptualisation though is dangerous: it both clarifies and confines. For instance, in terms of clarification (in the social sciences):

> [c]oncept formation concerns the most basic question of social science research: What are we talking about? Specifically, how do we make connections between the phenomenal world, the presumed subject matter of social science, and the linguistic world within which social science takes form? Concept formation thus lies at the heart of all social science endeavour (Gerring 2001: 35).

In terms of confining, conceptualisation reduces the complexity of the world while (commonly and falsely) seeming to give an adequate understanding of that complexity (Heron 1996). This kind of view recognises that socio-material phenomena are neither stable nor able to be consistently encompassed by some concept. Thus, in such cases, conceptualisation processes should be ongoing, reflexive, comfortably messy, partial and open to critique (Becker 1998; Sayer 2000). Both the clarifying and confining dimensions, discussed above, are mediated in

[1] An epistemic framework is a conglomerate of interlinked epistemic claims, rationales and practices for understanding the world. It incorporates the contextualised (scientific community) endorsement of what can be legitimately believed. As will become apparent, there is effectively only one epistemic framework that covers the thirty-two cases, even though there is no doubt considerable complexity in and across the cases (to some extents this analysis is a significant simplification of the case literature).

different ways amongst different epistemological frameworks, and these can be categorised into different conceptualisation traditions.

Conceptual traditions

Blaikie (2000), outlines four basic conceptualisation traditions: ontological, operationalising, sensitising and hermeneutic, of which the operationalising is of particular interest in this analysis due to the preponderance of positivistic frameworks amongst the thirty-two cases. Operationalising is the creation of a measure from a theoretical concept (Hox 1997). Blaikie (2000) defines operationalism as:

> [t]he operationalizing tradition is concerned with turning concepts into variables, with identifying the key concepts to be used in a particular study in order to define them and to develop ways of measuring them…[T]he imprecision of ordinary language must be superseded by a technical use of concepts (p. 133).

The operationalising tradition has a history stretching back and linked to logical positivism, although its form and character has shifted around over time. Still, an essential idea holds that the problem of representation is largely overcome by linguistic practices that are strongly defined or technically exact. This is to say it is assumed that there is a direct correspondence between an object (phenomenon) and the symbol/s used to represent its measurement. Part of the ontological and epistemological framework that relates to this statement is that the material world exists independently of mind, but is accessible for measurement and hence real knowing (Williams 2003). Now, logical positivism may be defunct but remnant-positivism neatly accommodates today's operationalising tradition.

Most of the thirty-two cases here are remnant-positivist in form, and so operationalism processes should be evident. The only literature that might escape this general requirement are Kingsley, Brock and DeBald (1988); Bliss and Martin (1989); Bliss (1992); Egan and Jones (1993); Egan *et al* (1995); and, Lönnstedt (1997), as they show elements of other epistemological frameworks. All the remaining pieces of literature can be considered to be well within a remnant-positivist framework, as will become evident as this chapter unfolds.

How the concepts were analysed

It was assumed that aspects of operationalism should be evident across the reviewed literature. At the level of concept formation, it was further assumed that those pieces of literature which attempted to match practice with research framework would either have defined concepts or evidence of referencing that showed (some aspect of) operationalising. At the beginning, this was done by assuming a quite basic approach concentrating on a two step analysis of the literature: (1) what was being measured in each piece of literature; and, (2) is what was being measured explicitly defined (explained or referenced)? There are more rigorous ways in which such an assessment could be carried out (*e.g.*, Gerring (2001) gives a far more complex system) and other epistemological/conceptual systems could also have been assessed, but as the research is overwhelmingly remnant-positivist and for the objectives of this analysis these two steps suffice. The outcome of the analysis is given in Appendix 6.

Three categories were constructed to bracket the use of a concept: 'defined', 'partially defined' and 'not directly defined'. When the pieces of literature were read, these categories were filled as articulated through the primary concepts that: (1) may be expected to appear (considering their topic/s or question/s) in each piece of literature; or, (2) had explicit statements made about them. For example, in Karppinen's (1998) paper there is an explicit statement: "[v]alue is a diffuse concept and can be defined in several ways…" (1998: 45). Value is then defined. This is good practice within the framework the research is set in. From such an indication of an explicit conceptualisation process, the concept of (forest) value was placed in the 'defined' category. Others, such as Jenkins (1998) who uses the concepts of 'vegetation value' and 'management', do not appear to have any explicit concepts, yet at some stage these concepts were turned into measures - hence the rating of 'not directly defined'. Some of the concepts given in the table (and Appendix 6) are guesswork on the part of this author, due to the difficulty of determining the core concepts under investigation when no explicit

statement is made within some of the case examples from the literature.

Extent of conceptualisation processes in the literature

Just over half (19 of 32) of the cases had some kind of conceptualisation process evident (includes two in the 'partial definition' category, see Appendix 6). Thirteen, of thirty-two, were without adequate conceptual processes. This pattern of failure in conceptual clarity is further reinforced when the total number of concepts are reviewed against the definitional criteria (see Table 3.1). Note that each piece of literature could have more than one conceptual array, although it should be kept in mind that the summation of these concepts is arbitrary for the reason discussed in the previous paragraph. Of the eighty-five concepts across all of the reviewed literature, well over half, sixty-four percent, were not directly defined.

Extent of conceptual definition	Number in each category	%
Defined	29	34
Partially defined	2	2
Not directly defined	54	64
Total	*85*	*100*

Table 3.1: Summary of the number of concepts defined adequately in the literature (drawn from Appendix 6)

A number of possible reasons emerge that can help explain this lack of conceptual clarity. Firstly, many of the pieces of literature are quite short, some only a handful of pages long, so space is at a premium and perhaps concepts were ejected to allow more general discursive space. Secondly, not all concepts can be defined or explored, as the focus of the research may be on only one or two concepts. Thirdly, and more likely, is related to the role that concepts play within theory. Many of these pieces of literature are (essentially) a-theoretical. So no theory

equals no concepts. One way of discussing this is that in the literature (and forestry milieu generally) concepts are perceived as is and hence do not need to be explained. Here, a day-to-day lay example in Australia is the word (and concept of) car. There is no need for an explanation when communicating this concept in the logics of everyday life. The concepts of management or attitude, for example, appear to be viewed in a very similar way within many of the cases. Concepts are unquestionably normative and have disappeared un-problematically into the day-to-day workings of the literature, not only as important tools in establishing the quality of a piece of research but also as fundamental, explicit parts of the very scientific research processes that are supposed to establish a particular warrant over knowing the world. All three of these possibilities are likely here, but there is an emphasis on the third point above regarding the role that concepts play within theory, as across the literature as a whole there is a pattern of producing a basic kind of social arithmetic that is effectively devoid of theoretical engagement. If this is correct, then the case literature here fails substantially to do what it suggests it can do and that alters, in the end, the way in which much of the research on forest owners should be read (downgrading its usefulness substantially).

This is not to say though that all the literature is troubled by a lack of conceptual clarity and misapprehension about epistemological claims. There are four cases in the literature with reasonable conceptual arrays: Bliss and Martin (1989); Egan, *et al*., (1995); Karppinen (1998); and, Rickenbach, *et al*., (1998). Ironically two of these do not necessarily have to use operationalising as the conceptual tradition underlying communication (The two are: Bliss and Martin 1989; Egan, *et al*., 1995).

What concepts are deployed?

Assessing the quality of conceptualisations within the literature produces a by-product that in itself holds interesting information. Table 3.2 (which can be found on p. 63) depicts this outcome, listing all the different conceptualisations and how frequently they appear. From this table, the conclusion can be drawn that the concept of management is, in a

variety of forms, the most common one deployed, although it is only *conceptualised* on five occasions. It is closely followed by goals, objectives and intentions, summing with management to nearly 50% of the total number of concepts across the literature. If similar concepts surrounding intentionality (and action) are added in (such as use, functions, attitude, motivations, behaviour and norms) then 63% of the total concepts are covered. To some extent, 'value' can also be grouped into this concept set as it is usually measured (in these kind of studies) via the proxy of attitude. This brings to 70% the number of concepts represented. So there emerges two dominant dimensions of conceptual application across the reviewed literature; management and intentionality (with similar concepts of use, function, attitude, motivation, behaviour and norm). There are only two other concept sets that rate over 2% of the total, being stewardship (6%) and forest managers (ownership) (4%). Of these, forest managers can be relegated to the management category and stewardship is popular due at least partly to the recent rise in ecosystem management principles within forestry (see Kennedy and Thomas 1996).

Generally, concepts are poorly dealt with

In conclusion, there appear to be widespread problems in the literature relating to how much of the research has been conducted in such a way as to violate the epistemological framework the research is set in (regards the type of conceptualisation process that should be going on within it). As will become evident as this review unfolds, this is only one of numerous problems associated with purported research practice and the matching of such to an epistemological framework. On a more positive note, two primary streams of conceptualisation have been identified within the objectives/goals stream of the literature on private forest landowners, that of management and intention (use, functions, attitude, motivations, behaviour and norms). Further, the dominance of management as an idea and concept is depicted.

No.	Concept	No. times mentioned	%
1	*Management*: active, ecosystem based, forest, vegetation. Forest management practice	20	24
2	Goals/ intention/ intended use/ long term objectives/ management intent/ objectives/ use objectives/ ownership objectives	16	19
3	*Timber*: objectives/ management/ production	6	7
4	Use/ functions/ utilisation	6	7
5	*Value*: environmental, forest, forest nature, vegetation	5	6
6	Stewardship/ forest stewardship	5	6
7	Forest managers/ owner (-ship)	3	4
8	Attitude, forest attitude	2	2
9	Constraints	2	2
10	Motivations	2	2
11	NIPF (landowner)	2	2
12	Selling option/ sellers	2	2
13	Utilitarian/ utility	2	2
14	Commercial forest lands	1	1
15	Behaviour	1	1
16	Cutting opportunity	1	1
17	Ethnicity	1	1
18	Harvesting	1	1
19	Landowner knowledge	1	1
20	Norms	1	1
21	Native forest and woodland	1	1
22	Naturalistic	1	1
23	Remnant vegetation	1	1
24	Plantation regime	1	1
25	Wildlife management	1	1
	Totals	*85*	*100%*

Table 3.2: Frequency of concepts in the reviewed literature

Theory used

This sub-section is based on one core tenet in regard to research: theory is central. The aim here is to briefly show why, so as to support the further analysis. Then, the thirty-two cases are analysed in a simple two step scheme.

What is theory?

Theory is a complex term with numerous meanings and layers (Turner 1991; Lewins 1992; Van Evera 1997; Blaikie 2000), though in its most basic form it can be thought of as: "…a story about how and why events in the universe occur" (Turner 1991: 1). A slightly more complex rendition of theory is as a statement of effect (*e.g*., this *causes* that) or explanation (*e.g*. this *causes* that *because*…). For instance, there is analytical theory (*i.e*., explanations of phenomena); normative theory (*i.e*., explanations of value/ethical systems); social theory (*e.g*., explanations of humans as social beings); psychological theory (*e.g*., explanations of human mind and behaviour); theory of method (*e.g*., explanations of research technique); and, theory of knowledge (*i.e*., explanations of how we know), to name just some. These categorisations are of differing classes and of ranging abstraction. To deal with some of this complexity, a basic picture of what constitutes theory is depicted here.

Drawing from Turner (1991)[2], theory can be constituted through concepts (and variables), statements and formats. Concepts (largely without variables) were dealt with in the previous sub-section. Statements explain how events represented by concepts are connected. Formats are groupings of statements, of one kind or another. Formats are of interest here, as they give an idea of some of the major and differing ways that theories might be thought of. This is a

[2] Turner (1991) details sociological theory, so there are limits to the understanding of theory presented here, as bracketed by the discipline and authors perspective, although it should suffice for the task. Also, Turner (1991: 585) believes that: "…sociology can be like any other natural science", which is not the position of this author, who adheres to a modified naturalism (as found in critical realism).

selective simplification of Turner's (1991) discussion, which is of considerable detail. Four formats are detailed: (1) modelling; (2) propositional; (3) analytical; and, (4) perspective[3]. These various theoretical formats may be mixed in any one study. In more detail, they are:

- Modelling is where diagrams are used to represent phenomena. Ordered visualisations of the relationships are as important as the individual linkages made within them. Such models may be numerically weighted. There are two types, analytical (usually abstract and generic, mapping broad connections) and causal (usually empirically grounded with simplified depiction of relationships and mapping causal connectivity via variables directly attributable to some empirical phenomenon/phenomena).
- Propositional theories (also known as empirical theory[4]) describe the relationship between two or more variables. Generally, they can be understood as a linguistic construct linked through a logic (nominally deductive) and which provides (attempts an) explanation of an empirical phenomenon/phenomena (Weinstein 2000). They vary via the degree of abstraction and their organisation as explanatory events, notably through three types: axiomatic, formal and empirical generalisations. Axiomatic involves highly abstract conceptual statements with propositional statements usually hierarchically stated on the way towards some empirical reality. Formal are weaker versions of axiomatic, usually with a cluster of principles which allow loose deductions about empirical reality. Empirical generalisations, as the naming suggests, are made up of generalisations derived from specific contexts and empirical events. Many

[3] This is after Blaikie's (2000) 'theoretical perspective' rather than what Turner (1991) calls 'meta-theoretical' which has been assigned a differing meaning in this thesis.

[4] Empirical is: "…pertaining to experience, especially sense experience. A belief, statement, theory, method, *etc*., is said to be empirical if it originates in, has a basis in, is derived from, or can be confirmed by, sensory observation. Empirical science has often been contrasted with formal or deductive science, such as logic or mathematics, whose theorems are taken to be valid independently of sense experience" (Mautner 1996: 166). This should not be confused with empiricism, which is: "[a] diverse family of philosophical views, all asserting the fundamental importance of *experience* in explaining knowledge, justification and rationality" (Godfrey-Smith 2003: 235 - italics are in original text). Research can be empirical but that does *not* make it empiricism, but empiricism is empirical.

masquerade as theory, but they are essentially regularities identified in specific contexts which are empirically based. Some are more complex, and do constitute theory (Turner (1991) labels these as *middle range theories*). Within this thesis, propositional theorisations are the ones most likely to be encountered in the 32 cases. As interpreted in this thesis, the form of the logic used to support an explanation alters how propositional theory may be understood when practised. This is tricky and complex, but a rough example is, on one hand, the search for justifiable, cause-effects, deductively determined from universal laws (*i.e*., nomothetic explanations) and, on the other hand, interpretation of meaning as a unique or particular case (*i.e*., idiographic explanations) (Morrow and Brown 1994; Mautner 1996; Blaikie 2000). This chapter and the thesis generally concentrate on nomothetic explanations, as they are central to the literature reviewed here.

- Analytical theories are where concepts are arranged into classificatory schemes, usually of relatively core phenomena to the functioning of the socio-material world. They come in two types: naturalistic, which attempt to capture the way the universe really is; and, sensitising, which serve to orientate researchers towards critical processes regarding some phenomenon/phenomena.
- Theoretical perspective is by far the broadest, involving questions about the assumptions that underpin whole classes of phenomena, such as what is the nature of reality, how do we know what is, what is the self, *etc*. Much of the theorisation here is strictly philosophical and may have little or no direct relevance to empirical testability or assessment. One kind of theory that can be grouped rudimentarily under this general category is that of normative theory, which has importance in this thesis. Normative theory is:

  > …any theory which seeks to establish the values of norms which best fit the overall needs…of society…and which would be morally justified (Jary and Jary 2000: 423).

  Normative theory is not acceptable within remnant-positivism, as it is another way of discussing ideology and of suggesting that what

ought to be can be derived from what is (factual), although it is an accepted part as has been mentioned, with qualifications, of critical realism (Sayer 2000). Normative theory has been discussed in Chapter 1 and will be again discussed briefly below and in Chapter 5.

Why is theory important?

Two reasons why theory is important are given in this chapter. The first is that empirical theory plays an important role in securing the knowledge claims of remnant-positivism (see Halfpenny (1982) for the place of theory in positivism generally). The second is that normative theorising plays an important role in informing the emancipatory potential of critical realism (Sayer 2000). The first point above will be dealt with here and the second indirectly so in Chapter 5.

Successful theorising (confirmed or falsified), within remnant-positivism, is seen to provide reliable, universal and truthful knowledge about the (objective) world. Truthful knowledge is not based on the theory itself, but on the observations undertaken. Regardless, analytical theory and especially propositional are a central part of remnant-positivist research. The engagement with propositional theory varies between that which is little more than a statement of hypothesis (or a research question) to models of significant heuristic and practical, explanatory complexity. Within remnant-positivism there is a confusing mix of such approaches. Although simplified, an abstracted empiricism (after Mills 1959) can be identified that eschews the use of theories above the level of the hypothesis (essentially forms of empirical generalisation), while there is also a more matured approach which uses sophisticated propositional (axiomatic, formal, middle-range) theories. Work in the philosophy of science (including social science) suggests that theory plays a vital part in building robust understandings of the socio-natural world, while a lack of theory leaves research open to charges of over-simplification and overt misrepresentation of the research context (Godfrey-Smith 2003). Consequently, the creation and deployment of this sub-section reflects this interest in adequate

theorising, which is itself reinforced in the methodological literature associated with remnant-positivism. An example is provided by de Vaus, in relation to social survey research in particular:

> • The role of the social scientist is to theorise - not to do social arithmetic. • Theories must be rigorously tested in the real world they purport to describe. • Data collection and analysis must be fashioned by theoretical ideas. • Social research should not be an endless and unguided collection of bits and pieces of information. • Theorising and collecting research data should be interdependent components of 'doing social science' (de Vaus 2002: 9).

From such a position as that of de Vaus and of this author, abstracted empiricism is downgraded and critiqued on the grounds that it reproduces a science that is not responsive to the latest philosophical understandings of what science or the world may be. This does not mean either, that radical philosophical positions need to be taken (as critical realism perhaps would be considered), but that the stronger components of research frameworks in (for instance) remnant-positivism are prioritised, which includes embracing adequate propositional theorisations.

How theory was analysed

The two step scheme on which this analysis rests is as follows:

1) utilising categories of ‘descriptive’, ‘theory testing’ and ‘theory construction’ to determine the relative level and type of engagement with theory in the literature; and,
2) focusing on what theories of human behaviour (being)/society and theories surrounding human-nature interaction are deployed in the literature.

These two steps are not necessarily cumulative and should be considered as independent of each other. Research is partial and there are limits to what can be expected in the application of theory, so only the first step above provides categories that will be a part of each case (as it essentially covers all possibilities here). The second step above provides two categories that serve to highlight research which may use theory more strongly. The two steps are described below.

The first step (from the previous page) draws on the idea of theory construction and theory testing as ideal types (Rose 1982) that provide a basic categorisation of how a research act is formally structured (*i.e*., what practice is done when and how they inter-relate). The following is largely drawn from Lewins (1992), who simplifies Rose (1982).

Theory testing;

> …starts with a particular theory…In order to test this theory, hypotheses need to be generated…The content of these hypotheses points to the sorts of decisions which need to be made about what will count as evidence and how it will be gathered…The task of gathering evidence is carried out…and is then ordered and analysed…to see whether it supports the theory or not (Lewins 1992: 45).

This kind of approach tends to push "…more structured…" forms of data gathering (*e.g*., survey questionnaires) and analyses (*e.g*., statistics) (Rose 1982: 10).

Theory construction, "…as the name suggests…[ends]…with a theory rather than starting with it" (Lewins 1992: 68). In truth, there is some theorisation before and during the start of research as the techniques of data gathering and assessment are pre-structured by other theories to some extent. It is with this step that such research gets underway. Once data have been gathered, the results are collated, conclusions drawn and theorisation/s made about how the data may be shaped (explained). This kind of approach tends to push "…less structured…" forms of data gathering (*e.g*., in-depth interviewing) and analyses/synthesis (*e.g*., thematic coding) (Rose 1982: 10).

Much research is either a mix of theory testing and theory construction, but usually with one kind being more to the fore than the other, or does neither, in which case it moves away from empirical study[5]. Nevertheless, this category is catered for under the ideal type of 'descriptive', where it is either *not* possible to determine just what was done, or construction/testing approaches were *not* central so that the research came across as largely descriptive.

[5] It is the form of the approach to research incorporated in theory testing or construction that is important, not whether a theory is actually tested or constructed (Rose 1982).

The second step focuses on theories of human behaviour/society and theories of human-nature interaction in an effort to confront a set of intractable problems in investigating any socio-natural milieu. These are that the universe is irreducibly complex and that there are an enormous range of ways (many of them contradictory and idiosyncratic) that we can attempt to understand (theorise) about what it is to be (Brier 2000; Noble 2000; Alrøe and Kristensen 2002). The focus on human behaviour/society and human-nature interaction reflect the major obvious categories that arise in the research topic: people and forests. The inclusion of these two broad theoretical areas further reflects the generalised issue that there are a wide variety of ways that people and society (see Mandler 1997; Archer 2000), nature (see Worster 1994) and socio-nature (see Franklin 2002) can be understood[6].

Theory testing, constructing and 'no' theory approaches

Table 3.3 (on p. 71, and as drawn from Appendix 7) shows the mix of 'descriptive', 'theory testing' and 'theory construction' types that were used to categorise the thirty-two cases. The descriptive section is split into two components: 'plain' and 'theory testing'. 'Descriptive: plain' means that there was no sign of any effect and/or explanatory statement(s) in the piece of research. 'Descriptive: theory testing', means that there was rudimentary effect and/or explanatory statement(s) that appeared to be of a theory testing form, usually linked to another work not reproduced directly. 'Theory testing/construction' means that not only was there usually some effect and/or explanatory statement(s), but that the design of the research was obviously of one (or a mix) of either of the categories. The extent to which theory is formalised varies, either as an analytic or propositional type.

[6] Nature is a very complex word (Barry 1999) and this complexity is alluded to throughout this thesis but left unresolved, as neither space nor time existed to do so. It means that there are contradictory although multiply legitimate uses of the term throughout the thesis, most notably in using *nature in antithesis to society* (*i.e.*, nature and society) but also in using *nature together with society* (*i.e.*, socio-nature) and further, touching upon the thought that there is no such thing as nature (and society) (see Latour 2004).

Descriptive		Theory testing	Theory construction	Theory testing/ construction	*Total*
Plain	**Theory testing**				
12	7	7	2	4	*32*

Table 3.3: Theory types and the number of pieces of research in each

From Table 3.3, it is clear that the majority of the reviewed research is descriptive (19) and the largest type in that is 'plain' (12). In the remaining categories, making up less than half of the total, theory testing (both weakly explained and more strongly so) made up most of the research (7). The mixed type (4) and the theory construction type (2) are in the minority here (and even more so when considering overlapping authorship of Bliss and Martin 1989 with Bliss 1992, as well as Egan and Jones 1993 with Egan *et al*., 1995).

The analysis shows low levels of theorisation with little engagement with effect and/or explanatory statement(s). When writing out of a remnant-positivist frame in the natural sciences, it is possible to forgo theorisation at the level discussed here (*i.e*., aimed at heuristically and practically sophisticated theory) and still produce what could be considered good research. To a lesser extent it is possible to do so when dealing with people (Kincaid 1996), although this is open to contestation (Layder 1998). That the largest component of the research reported here (19 examples) has little or no theorisation, suggests a poor outcome for making sense of how landowners live their lives amongst the trees. The rationale behind this statement is simple: there is little diversity in understanding social life within either these research designs or those components that would allow differing ways of understanding to come to the fore regarding what it is to be human (such as in sophisticated analytical theorising).

In essence, the descriptive research investigating the attitudes of landowners towards management or ownership objectives carries an implicit theory of their lived reality. Every 'descriptive' study has such a theory, it is just that the theory is not being expressed. If it could be expressed, it would be likely through the meta-theoretical assumption that

people and the social are part of law-like causal systems which can be modelled truthfully through an objective language as verified by statistical analysis. It is suggested here, that in a topic which has to deal with the complexity of the world outside of the laboratory, this is not a helpful way to engage with applied/policy outcomes demanding effective simplifications of highly complex, emergent and constantly changing phenomena (this point is akin to issues argued by Bryant and Wilson 1998; Patterson and Williams 1998).

The dominance of descriptive and theory-testing designs can be explained by the preferred epistemology. Theory-testing designs generally tend to be technically quite structured and most of the planning is completed before data is collected allowing stricter control over what can be a messy process: dealing with the gritty day-to-day complexity of social life. Such designs are preferred in abstract empiricism and remnant-positivist epistemologies, and such framings seem the most common amongst the cases. There use would also tend to see mixed designs and construction designs de-emphasised, as mixed designs: (a) do not produce as valid a knowing; and, (b) their design does not generally appear to be part of standard acceptable practice (or training) within the forestry milieu.

There may be other reasons for the dominance of descriptive and theory-testing designs. For instance, the selection of literature was chosen on the basis of availability and apparent relevance to the research question (and it cannot be considered as a representative sample). Also, non-English research, which may have a very different character, was not included. But, as will become clear as this chapter continues to unfold, abstract empiricism or remnant-positivism do appear to be the standard. It presents as a worrying block of literature that may well work to suggest to researchers that this patterning is a correct one to follow while clouding the researchers' understanding of landowners in a variety of ways (this is explained in Chapter 5).

Theories of behaviour/society and nature

The outcome of analysing the literature for theories of human behaviour (being)/society and theories surrounding human-nature interaction are given, respectively, in Tables 3.4 and 3.5 (Appendix 7 contains the full analysis). The assessment of the theory involved came from these cases that were of an obvious theory-testing, construction or mixed type. Both these tables were constructed by looking for strong engagement with either the testing (or use) of a sophisticated theory or the construction of (or towards) an evidentially robust theory. Three categories were used: 'implicit' (*e.g.*, outlining elements of a theory, notably through concepts, but not referencing or providing an adequately modelled explanatory system), 'explicit' (*e.g.*, details the theory in some way or another) and 'no theory'.

Theory of human behaviour/society supplied			
Implicit	Explicit	Nil	*Total*
13	3	16	*32*

Table 3.4: Number of theories of human behaviour/society in the reviewed literature

Theory of human – nature inter-relationship supplied			
Implicit	Explicit	Nil	*Total*
7	1	24	*32*

Table 3.5: Number of theories of human-nature inter-relationship in the reviewed literature

The explicit category in Tables 3.4 and 3.5 show that in total four of the literature cases (and their respective researchers) make a direct effort to theorise either human behaviour/society or people-nature inter-relation (interestingly, of these 4 none use both theory on human behaviour/society *and* people-nature inter-relation). The four using mature (explicit) theoretical frameworks are shown in Table 3.6 (on p. 74). The implicit category in Tables 3.4 and 3.5 gives a rudimentary picture of

researchers who have the idea that people can (or should) be theorised and that nature can (or should) be theorised. In this, broadly, echoes or the sense that there has been some effort to use theories of human behaviour/society are significantly more common than those of nature-people inter-relations (respectively, 13 versus 7).

Author/s	Type of theory	Theory area	Theorists used[7]
Young and Reichenbach (1987)	Theory testing	Human behaviour	Fishbein and Azjen (1975)
Lönnstedt (1997)	Theory construction	Human behaviour	Kleindorfer *et al*., (1993)[8]
Karppinen (1998)	Theory testing	Human-nature interrelations	Pietarinen (1987)
Kline, Alig and Johnson (2000a)	Theory testing	Human behaviour	McFadden (1973); Maddala (1983); Hanemann (1984); Ben-Akiva and Lerman (1991)

Table 3.6: Four studies with explicit use of theory

The outcome from the analysis is straightforward: analytic or propositional theories are rare in the reviewed literature. This lends weight to the previous result, with the dominance of descriptive (plain) and descriptive (weakly testing) designs, pointing to researchers of private forest landowners commonly utilising an abstract empiricist framework (devoid of sophisticated theorising) at the cost of other ways of shaping knowing. It is possible that other reasons contribute to this scenario. Perhaps the selection of literature here does *not* offer a reasonable

[7] As these references (in the 4th column of Table 3.6) have not been used by this author, they are listed here: *Ben-Akiva, M. and Lerman, S. (1991). *Discrete choice analysis: Theory and application to travel demand.* The MIT Press: Cambridge, United States of America. *Fishbein, M. and Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*. Addison Wesley: Massachusetts, United States of America. *Hanemann, W. (1984). Welfare evaluations in contingent valuation experiments with discrete responses. *American Journal of Agricultural Economics*, **66**: 332-341. *Kleindorfer, P., Kunreuther, H. and Schoemaker, P. (1993). *Decision sciences: An integrative perspective*. Cambridge University Press: New York. *Maddala, G. (1983). *Limited dependent and qualitative variables in econometrics*. Cambridge University Press: United States of America. *McFadden, D. (1973). Conditional Logit Analysis of Qualitative Choice Behavior. In *Frontiers of Econometrics*, P. Zarembka (ed.): Academic Press, New York. *Pietarinen, J. (1987). Ihminen ja metsä: neljä perusasennetta (Man and the forest: four basic attitudes). *Silva Fennica*, **21**, 4: 323-331.

[8] Lönnstedt, although theory constructing, drew from Kleindorfer *et al*. (1993).

coverage of the available literature. Perhaps the general isolation of forestry from other disciplines, albeit slowly shifting (Parkins 1999; Kanowski 2001) away from its central concerns in the natural sciences and engineering (Luloff 1995; Marcin 1995), contributes to a perceived lack of theoretical tools being available for use. Here, though, the first point on abstracted empiricism will continue to be pursued.

Generally, theory is not well used

This thesis is founded on the belief that analytic or propositional theorising above the level of the hypotheses are an important part of good (social) science. It was assumed that when it is necessary to gain some understanding of landowners inter-relating with forest, then reliance is required on some theory (from many) in order to explain and suggest action. Further, the inter-relationship of people and nature needs theoretical elucidation (such as through environmental values) or choosing a bold path, rejecting nature as assumed to be something out there, inanimate and ready to be worked upon, and grasping nature and people as co-constructed (Castree and Braun 1998). But as it cannot be reasonably expected that all or even most research will engage with such a sentiment about adequate theorising, a more basic approach that grouped research as theory testing, theory construction, mixed or descriptive, so covering non-theoretical or a-theoretical approaches, was used. It was found that the reviewed literature was mostly descriptive, with most of the remaining literature evidencing a strong emphasis towards theory-testing. It was also found that theorising above the level of the hypothesis or research question was rare, although four cases out of thirty-two emerged as having good engagement with theory. Finally, it was suggested that the reason for this lack has a lot to do with a particular approach to science that can be summed by the term and frameworks of abstract empiricism and remnant-positivism.

Sophisticated theorising alone does not make good science, nor does any particular research design/strategy. But a lack of engagement with theorising and a failure to embrace adequate research designs that reflect current understandings of the socio-natural world and of what

science is only serve to increase the challenges of producing adequate accounts regarding landowners' lives amongst the trees.

Research designs and methods used

This sub-section deals with what is traditionally considered to be one of the core issues in reporting (and doing) research: how it is done. It covers a confusing mix of overlapping concepts usually used in describing how research is done (such as research design, technique, method and methodology), through concentrating on the broader goals of research practice in the application of specific methods. By the end of this subsection it will have become clear that the research studies conducted, as reported in the reviewed literature, are overwhelmingly of one type: synchronic, extensive research (mostly large '*n*', observational), using mail, telephone or interview questionnaires. Further, the data from these studies has been statistically analysed, usually descriptively, and presented as rankings, less so associationally. These studies are generally poorly practised (at least as reported), so raising significant questions over the utility of the derived results, based on failure in what are central components of such studies: boundedness, mechanism, representativeness and utility (after Gerring 2001).

How research design and method are analysed

Unlike theory, there is little need to explain the role of research design and methods in empirical research as it is, by and large, self-evident. Unfortunately, this does not mean that a simple framing exists for discussing research design and methods (Schwandt 1997; Blaikie 2000). If anything, the complexities are large, although less involved with philosophical issues than with the sheer difficulty of defining research design and methods in a pluralistic world that defies simplifying. Many of the common words used, such as survey research, ethnography, case studies, *etc.*, to help aggregate types of research design and methods are quite *unhelpful* in coming to grips with how research is done.

In order to minimise this problem, the analysis of how research was done is carried out here through a three step process. The research is first classified as extensive and/or intensive, based on looking for a particular set of patterns in the 32 cases (drawn from Sayer 2000). Then the method of data collection/selection and analysis/synthesis is defined, drawing on the terms used by the authors involved in each case. Finally, some elements of the reported practice are drawn out and put in context to the extensive/intensive research classification. This classification is, in one way, an axiological system and has resonance with the next sub-section on normative commitments.

The classification system of intensive and extensive research (design) is drawn from Sayer (2000) and is depicted in Table 3.7 (on p. 78). Intensive and extensive are broad generalisations (which are set in contradistinction to each other) which can, by and large, capture the explanatory strategy of any one piece of research. They are explained by Sayer (2000) as follows:

> [e]xtensive research, informed by a successonist theory of causation and hence aiming to find regularities among atomistic events or variables, seeks out mainly formal similarities and differences rather than substantial connections. Intensive research seeks out substantial relations of connection and situates practices within wider contexts, thereby illuminating part-whole relationships (p. 22).

Extensive research can be roughly associated with a research strategy such as the social survey (see as exemplar de Vaus 2002: 3-7), while intensive research can, for instance, be roughly associated with a research strategy such as an ethnography (see as exemplar Hammersley 1990: 2) or a holistic case study (see as exemplar Verschuren 2003: 132), but this is definitely *not* a fixed rule (Sayer 2000).

Sometimes, a mix of intensive and extensive research occurs within any one study, and this tendency has become more pronounced in recent years with the rise in mixed method or methodology (model) studies (Tashakori and Teddlie 1998). Where such designs appear to have been applied in the reviewed literature, they have been noted in this analysis. These mixed studies are, as a generalisation, more

demanding and complex than those studies that focus on one explanatory strategy, and are in the minority here.

	Intensive	Extensive
Research question	How does a process work in a particular case or small number of cases? What produces a certain change? What did the agents actually do?	What are the regularities, common patterns, distinguishing features of a population? How widely are certain characteristics or processes distributed or represented?
Relations	Substantial relations of connection.	Formal relations of similarity.
Type of groups studied	Causal groups.	Taxonomic groups.
Type of account produced	Causal explanation of the production of certain objects or events, though not necessary representative ones.	Descriptive 'representative' generalizations, lacking in explanatory penetration.
Typical methods	Study of individual agents in their causal contexts, interactive interviews, ethnography, qualitative analysis.	Large-scale survey of population or representative sample, formal questionnaires, standardized interviews. Statistical analysis.
Limitations	Actual concrete patterns and contingent relations are unlikely to be 'representative', 'average' or generalizable. Necessary relations discovered will exist wherever their relata are present, for example, causal powers of objects are generalizable to other contexts as they are necessary features of these objects.	Although representative of a whole population, they are unlikely to be generalizable to other populations at different times and places. Problem of ecological fallacy in making inferences about individuals. Limited explanatory power.
Appropriate tests	Corroboration	Replication

Table 3.7: Differences between intensive and extensive research (from Sayer 2000: 21)

A method is: "a procedure or process for obtaining an object" (*Encyclopædia Britannica* 1976: 1422). The two points which distinguish method in research are: (1) collecting (common in extensive research) and selecting (common in intensive research) data; and, (2) analysing (common in extensive research) and synthesising (common in intensive research) data. These two points were assessed in the reviewed literature using, initially, Babbie (1992); Dey (1993); Leedy (1997); Tashakkori and Teddlie (1998); then later using Flick (2002); Creswell (2003). Results are also analysed within a broader category that depicts four

differing forms in which they are presented: ranking, associational, typological and thematic. This is a simple and arbitrary system. Ranking means that results are presented as a numerical ranking or frequency (*e.g.*, 10% of respondents harvested timber; 30% carried out fire prevention activities, *etc*); associational means that results depict a relationship between two or more entities/variables (*e.g.*, *managers* strongly aim to obtain *income* from their forests); typological means that a classificatory system has been developed (*e.g.*, landowners can be divided into the four categories of: (1) timber agriculturalist; (2) range pragmatist; (3) timber conservationalist; and (4) mixed); and, thematic means that word-language is used to shape a story of some kind (predicated on themes and/or content emerging and imposed on or as data) (*e.g.*, "Bill Smith spoke for several [forest] managers when giving his central reason for devoting so much time and effort to forest management: *I hate to golf!*" (Bliss and Martin 1989: 614 – italics are in original text)). By and large, ranking and associational are related to numerical results, thematic to word-language results and typological (in a certain way) to both.

A final piece of analysis is that of chronology or temporal scope. These are complex terms that also suffer from some conceptual difficulty in the general methodological literature, especially as the two most common terms of cross-sectional and longitudinal are also research designs as much as depictions of the chronological frame in which research is conducted. For the sake of expediency, the terms synchronic and diachronic are used here (after Gerring 2001), although implicitly they link to cross-sectional and longitudinal design issues. Synchronic essentially means occurring at one time. Diachronic essentially means occurring over time (Mautner 1996; Gerring 2001). Although the terms have a root in linguistics (relating to evolution and the structure of language), they are used here in place of cross-sectional and longitudinal, respectively. Synchronic studies rely on differences in existence at the time of the research, while diachronic studies operate across at least two time periods and so can assess change over time. Diachronic designs can allow certain approaches to research questions

and building knowledge (in a discipline or milieu) that synchronic designs can not, especially questions of change and assessing temporal order (de Vaus 2001).

A final point is that five of the pieces of literature are studies that to some extent amalgamate other studies (essentially multiple surveys). This means that their reporting on technique is at a lower level of (potential) complexity than all the rest (as they have to compress more information in roughly the same amount of space). This should be kept in mind in the analysis to come. These studies are:

1) Birch, Hodge and Thompson (1998): amalgam of 3 research studies reporting on two surveys.
2) Brooks and Birch (1986): reports on 14 surveys.
3) Brunson, *et al*., (1996): reports on 11 surveys.
4) Kuhns, Brunson and Roberts (1998): reports on 2 surveys.
5) Marty, Kurtz and Gramman (1988): extends and draws on earlier work by Kurtz and Lewis (1981).

The designs, methods, temporal scope and presented forms

The analysis of the research designs are shown in Table 3.8 (on p. 81, as drawn from Appendix 8a). The results are quite stark, the bulk (26) of the 32 cases are extensive in form. The majority of the research depicts causal events through regularities across variables. As has been noted, there is nothing inherently wrong with such an approach by itself. Problems though can emerge when it has become all but the only way in which private forest landowners are understood. Here, an explanatory strategy, through sheer dominance, can become restrictive of ways in which knowing or knowledge is shaped and which in the end may influence action (policy). A better outcome would have seen a more even mix of extensive and intensive designs alongside diversity in methods (something that is also lacking, as will be discussed to follow). Further, it is *not* enough to include the mixed designs with the intensive so as to more adequately balance the number of extensive designs. Of the three mixed methodology designs, one is stronger on the extensive side, one

stronger on the intensive side and one is difficult to determine, so the mixed designs - in totality - do *not* automatically add to the diversity of the reviewed literature. All of this adds to the sense that the literature has little diversity, with an attendant lack in different ways of knowing throughout the reported results.

Extensive and intensive research	Number of times used
Extensive	26
Intensive	3
Mixed methodological (model)	3
Total	*32*

Table 3.8: Extensive, intensive and mixed research designs of the reviewed literature

The methods of data collection/selection in the reviewed literature are shown in Table 3.9 (drawn from Appendix 8a).

Method: data collection/selection		Number of times used
Questionnaire:	mail	16
	telephone	9
	interview	5
	Total	30
Face to face interview		9
Focus group		3
Document analysis		2
Delphi		1
Ecological measure of forest condition		1
Field inspection		1
Participatory observation		1
Secondary data		1
Unknown		1
Total		**45*

Table 3.9: Methods of data collection/selection in the reviewed literature. *As each research design can use several methods, the total exceeds the number of studies (45 listed methods versus 32 case studies).

Questionnaires dominate with 30 applications (67%) out of a total of 45 methods. This overt commitment to questionnaires carries a set of consequences which again restricts how private forest landowners and forests might be known.

A questionnaire is a form containing fixed questions. The questionnaire form is administered to a person so as to elicit information pertinent to a research question/topic. Generally, questionnaires can be considered as inherently restrictive of communication (especially mail questionnaires), requiring much pre-planning and thought prior to the point of communication so as to minimise respondents misinterpreting some facet of the process. Questionnaires can allow for a degree of respondent and interviewer flexibility (notably telephone and personal interview types), but the strength of a well-made questionnaire is in the capacity to meet an epistemological commitment to producing a certain type of valid, reliable, objective knowledge. This, in practice, involves a technical protocol which seeks to remove error (Dillman 1991), but which tends, as a by-product, to reduce the complexity of social life. Consequently, creating and administering a questionnaire is a complicated and laborious task and a good questionnaire is *not* at all easy to construct or administer (Dillman 2000), requiring a high level of skill across a diverse range of practices. An appropriate way perhaps of expressing this issue is through briefly looking at poor questionnaire construction.

Poor design of questionnaires and questions *per se*, is an enduring and widespread problem in survey research (Fowler 1995). Further and rarely, in the reporting of research in journals for instance, can questionnaires be easily accessed (as there is usually no room to include them), so it can be nigh on impossible to easily gauge one. Amongst all of the reviewed literature, only with the Northern NSW Forestry Services (1999) study was the questionnaire available for assessment[9] and it was poor when reflected against the standards set by Dillman (2000).

[9] Both Jenkins (1998) and Hamilton, Dettmann and Curtis (2000) provide examples of a questionnaire in their research reports, but it is not evident if they are presented in the format respondents received them or are artefacts of the format of the reports. They were left aside because of this.

For instance, it deployed socio-demographics as the first set of questions, but they should be asked last because they usually contain invasive questions (like income) which generate respondent resistance to completion. Nor are they linked directly to the apparent goals of the survey, so bewildering respondents at the start of the process as to their relevance. Further, the form was laid out in a confusing way, with sets of multiple questions presented in such a way that the respondents had to navigate themselves through sub-questions, any of which may not necessarily be relevant to each respondents own circumstances. The focus on questions about timber harvesting was likely to have meant that those who were not predisposed in some way to harvesting were unlikely to have completed the survey. The form also asked about clearing of forest. Considering the resistance to and fear of government amongst some landowners, those who have harvested timber and cleared forest are likely to be wary of completing such a form that asks them about clearing, without some further contextualisation. In other words, it is likely to be only those who have forest on their property, trust government and who are active timber managers and harvesters who filled out the survey. These examples go a long way to undermining the link between questionnaire and epistemological commitment (lethally, it could be argued in this case).

The only remaining method with a reasonably high rate of usage (9) was the face-to-face interview, but a more accurate assessment of face-to-face interviews in the reviewed literature reduces this category to 4 (it is not straight forward to identify each method used, as it depends so much on the writing skills of the author/s involved, how much they write-out and how much they know about the method).

An interview is essentially a conversation driven by a specific intention (Burgess 1984). This definition is loose enough to include the questionnaire interview category, but it can be further modified by incorporating the sense that either:

- the interview is conducted within a longer term relationship between interviewer and interviewee; and/or,

- to obtain an insiders understanding of a persons' life or general social context; and/or,
- the interview itself is structured not through particular questions, but through broad topics or at times unstructured in terms of particular topic areas.

Other definitions can be applied (see Minichiello *et al*., 1995) but the general sense should be apparent here.

The parameters for assessing interviews as either questionnaire interviews or as semi/unstructured interviews, for instance, were fairly loose. Five of the face-to-face interview category could reasonably be moved to the questionnaire category, but for the difficulty determining the extent to which the interviews conformed to one or the other type. Strictly speaking, this author had confidence that only four of the face-to-face interviews could be considered as interviews well away from the questionnaire type (those performed by Bliss and Martin 1989; Bliss 1992; Egan and Jones 1993; Lönnstedt 1997).

The general dominance of interviewing and questionnaire approaches over all other methods of data collection/selection leads to the further conclusion that data is being generated in such a way as to consistently deny diversity in the presented results. The Delphi, focus group, participatory observation and document analysis are, for example, major forms of data collection/selection[10], and it is a significant issue that they are simply not well used (let alone any other methods). Their theoretical assumptions provide significantly enhanced ways in which the world may be known and would have been well worth undertaking to either a greater extent or in drawing on other techniques.

The methods of data analysis/synthesis in the reviewed literature are shown in Table 3.10 (on p. 85, as drawn from Appendix 8a).

[10] There is also a Q-sort technique in amongst the interviews, although it was not analysed as separate to a questionnaire process.

Method: data analysis/synthesis	Number of times used
Statistical	29
Thematic	4
Unknown (narrative?)	1
Total	**34*

Table 3.10: Methods of data analysis/synthesis in the reviewed literature. *This total of 34 accounts for the two mixed methodological designs, which use two data analysis/synthesis forms.

Not surprisingly, considering the emphasis on extensive designs, statistics dominates as the method of choice in data analysis/synthesis. Given the lack of engagement with concepts, theory and design diversity, previously noted, statistical techniques appear to have taken the place of methodology (after Morrow and Brown 1994). Further evidence for this is in the way that the weight of design qualification and planning within the reviewed literature generally falls on the nuances and specifics of statistical analysis.

When broken down marginally further, in order to look at a little more complexity in the use of different methods of data analysis/synthesis (see Table 3.11 on p. 86, as drawn from Appendix 8a), there is a significant gap between the number of what might be called basic statistical manipulations (such as frequency tables and the like), expected in all statistical analysis designs, and more complex associational and typological analyses (29 versus 16 associational and 4 typological). Around one third of the analyses rely solely on basic statistics. There is certainly a role for basic statistical analyses (and such description is *absolutely necessary* in extensive designs), but it is arguable if they should so commonly be the *sole* practice. From reading the various cases, comes a sense of obtaining just numbers or percentages doing *x* or *y* as representative of landowners' lives. This also obliquely echoes back to the kind of questions asked in the research, because what statistics are used is motivated by the type of questions asked and many of these questions are rarely tackling the

complexity of landowners lives. Tables 3.10 and 3.11 re-enforce the earlier perspectives about the tendency towards social arithmetic in the reviewed literature.

Form of results presented	Number of times used
Ranking	29
Associational	16
Typological	4
Thematic	3
Unknown (narrative?)	1
Total	**53*

Table 3.11: Form of presentation of results in the reviewed literature. *This number exceeds the number of reviewed literature pieces (32), as results could be presented in more than one way.

The temporal scope is shown in Table 3.12 (drawn from Appendix 8b). The results are unsurprising, as there are no experimental studies in the literature, and there is little focus on change over time in research questions or topics. There is some potential for using diachronic studies in assessing the shift in forest use over time, especially related to the rise of later-day environmentalism since the 1960s.

Temporal scope	Number of times used
Unknown	1
Synchronic	29
Diachronic	2
Total	*32*

Table 3.12: Temporal scope of the reviewed literature

Quality of practice

Of vital importance in the conduct of any research, is that the normative commitments (*i.e*., ontological, epistemological and axiological) held by the researcher not only fit the assumptions made, but also that the practice undertaken goes a good way towards matching the

epistemological commitments (Patterson, *et al*., 1998). This is a not uncommon area of failure, both practically and rhetorically (*e.g.*, as in a written outcome).

Looking at quality of practice across the reviewed literature (and as already touched upon on, we can discern a variety of poor (and in places good) practice. For brevity's sake, a small selection of problematic practices are highlighted in order to explore failures in epistemological-practice interlinks[11].

The following four examples drawn from the reviewed literature raise questions over the effectiveness of the epistemological-practice interlink.

1) Blatner and Greene (1989) undertook a sample survey where potential respondents were determined through stratified random selection. In one stratification (Ozarks) respondents had to be chosen as it was not possible to balance (roughly) the number of timber sellers and non-sellers (a required part of the method). The rationale behind this was not made clear (*i.e*., why they decided to do both probability and non-probability sampling when the population parameters they had defined caused difficulties in obtaining a probability sample). What they could have done is modify the population parameters so that *all* the respondents would have been from a probability sample, if not then there is little need to pursue part of the population as randomly chosen while another part is not and then pool the data from the two different sampling distributions for analysis. This potentially undermines the whole point of probability sampling and the protocol match to the epistemological frame (Babbie 1992).
2) Northern NSW Forestry Services (1999) also conducted a sample survey that appears to have been sent to a wider sample than the instrument (questionnaire) was actually designed to assess (those with native forest). The author's write:

[11] The epistemological-practice interlink is a shorthand that covers, on one side, ontology, *epistemology*, axiology, methodology, meta-theory, ethics, *etc*., and on the other side, the *practice* of a particular piece of research.

> There was no attempt to limit the survey to landowners whose properties carry native forest…[p. 1]…In designing the survey it was impossible to eliminate properties carrying no forest within the constraints of time and budget (Northern NSW Forestry Services 1999: 4).

It appears that questionnaires were sent out to a random selection of all owners of land 100 hectares or larger (of which there were 2,128 out of 10,161), yet the survey instrument and research objectives were focused only on all owners of land 100 hectares or larger *who had forest* on their property. Consequently, not only would this increase non-response from people who have no forest and see no use in filling out the survey, but more importantly, there is a mismatch between the survey population and the measurement device. Such a mismatch can have severe ramifications on the results (a two stage sampling design was arguably needed to drop 'all landowners' down to 'all landowners with forest') (Babbie 1992). This probably assisted in giving a 12% response outcome (254 out of the 2,128). On this basis, the survey should not have been conducted, until time and money was found or another research design was chosen.

3) Dettman, Hamilton and Curtis (2000), who conducted a sample survey, provide an example of a poorly written piece of literature where it is difficult to determine just what was done. For example, with their defined population, it is difficult to determine if questionnaires were mailed to landowners who had Box-Ironbark forest (the population under study), or just to landowners *per se*. If the survey was mailed just to landowners then there is a significant problem with the population selection frame, as the sample population is not the population who is supposed to legitimately respond to the survey (similar to the problem in the previous example). They note:

> A total of 358 landholders responded to the mail survey [out of 552], for an overall response rate of 72% [p. 96]…[while on p. 99]…A total of 19 (8%) of the 233 landowners with BIR [Box-Ironbark] on their properties indicated…

This apparent contradiction in reporting (between 358 'undefined' respondents, but only 233 respondents who fall into the sampling

frame) can be found again in their Table 1 where there is a reference to 358 landholders (who should have responded) with Box-Ironbark forest, and a range of 337 to 349 actual respondents, noted in the text. It is not necessarily that the results are in dispute, just that determining what was done is difficult because the writing is not clear.

4) Fowler (1993) notes that a full description of procedures is of significant importance because there is a need to:

> …provide a good understanding of how well sample estimates are likely to describe the population from which the sample was drawn…[and]…to provide the procedural details needed to replicate a data collection effort and/or detect procedural differences between surveys that would affect comparability (p. 137).

Birch, Hodge and Thompson (1998) fail to define their survey populations (see p. 79, as the study amalgamates three surveys). They note that non-respondents were contacted, but then fail to note what that produced. These are significant violations of procedural actions that Fowler (1993) notes are necessary for the production of good survey work.

These examples above point to significant problems in maintaining the epistemological-practice interlink at a requisite level for each research case to be considered as effective or meaningful products in terms of their apparent epistemological frameworks.

Gerring (2001) lists ten factors which when adequately met, dependent on the context, can count towards good research design and the maintenance of adequate epistemological-practice interlinks:

> ...plenitude, boundedness, comparability, independence, representativeness, variation, analytic utility, replicability, mechanism and causal comparison (p. 163).

A number of these conditions may be considered as unmet by the case literature, most notably analytic utility, mechanism and boundedness. Boundedness, refers to: "...including relevant cases and excluding irrelevant ones" in a specified population (Gerring 2001: 164). As noted, some of the studies fail to adequately define a relevant population in regard to their research question (this also relates to representativeness). Unfortunately, the general lack of theory in the case literature

makes determining whether boundedness has been achieved an even harder task, as many assumptions directly relevant to the research questions and context are not revealed. Analytic utility and mechanism are important in so far as they suggest theoretical adequacy and determination of some idea of causal connectivity (mechanism), in which it can be argued that adequate conceptualisation is important. The significant absence of theory and consistent conceptualisation, both of human action or behaviour and of human-nature interaction, leaves behind rather insufficient or implicit models that are difficult to expose or test. In other words, it is difficult to be even moderately sure that a reasonable argument has been established for analytic utility or determination of mechanism. In places, the case literature fails on these counts.

This does not mean that there were not good examples of research practice. It is evident that some authors strongly recognise deficiencies of design or where contexts overwhelm precise practice. For instance, Rickenbach, *et al*., (1998) recognises problems brought about by the general lack of information in the literature on their topic and the need to create Likurt scales from very little information[12]. In partial response, they ran focus groups to prepare their survey and attempted to assess the robustness of their Likurt scales. Blatner and Greene (1989); Jenkins (1998); Kangas and Niemeläinen (1996); Young and Reichenbach (1987) also note weaknesses or issues of concern in their designs, admirable and worthwhile actions.

Some authors seek to improve research design, such as Bliss and Martin (1989); Bliss (1992); Bourke and Luloff (1994); Egan and Jones (1993); Egan, *et al*., (1995). These studies are particularly interesting because they recognise the weakness of results generated in the extant literature on private forest landowners and then attempt to promote more adequate research designs. Interestingly, a lack of understanding of philosophy of science impairs their capacity to fully engage with the consequences of their critiques.

[12] A Likurt scale is a type of measurement instrument for a phenomenon (DeVellis 1991).

A lack of methodological understanding (at the very minimum) leads to some interesting tensions in these exemplar cases for improving research design. For instance, Bliss and Martin (1989) note how;

> [n]early all [NIPF studies] rely exclusively on traditional survey techniques for data collection (p. 601);
>
> and that,
>
> …few new insights have emerged [on landowners] despite the large number of surveys conducted in recent years (p. 604).

They then outline a mixed methodology study for advancing understanding, but they use a problematic conceptual apparatus to do so – the quantitative/qualitative divide. The divide can be used to rudimentarily discuss methods, but it breaks down all but completely in terms of ontological, epistemological and methodological understanding (see Blaikie 2000). Just one of the consequences of this is that they are unable to fully disentangle themselves from aspects of remnant-positivism. For example, they are still caught in the language and generalities common to that framework such as when they note that their study,

> "…identifies *previously unrecognized variables* which affect the forest management decisions of NIPF owners" (p. 620 - italics are mine).

Such a statement links to a reductionistic language and practice that in the end relies upon a modelling exercise that abstracts social life into easily measurable units (Byrne 2002). It stands against a more process centred view of social life in which the Bliss and Martin (1989) study *seems* to be grounded, hence the tension between the apparent effort to break down methodological barriers and the actual language used[13]. This problem is repeated in Bliss (1992), a thematic study, in which Bliss remarks;

> [t]hese characteristics of the study sample and the small sample size dictate the necessity to exercise great caution in

[13] Process is used here to mean, "…the emerging, sequencing, unfolding, ongoing features of group life. It is the shaping, the forging, the forming, the constructing, the implementing, the ad-hocing, and the building up of human interaction…process does not deny planning or the development of routine practices and recipes for action. Neither does it ignore the temporal (historical) or the organizational (relational) linkages of action. Rather, it locates activity squarely in these contexts" (Prus 1987: 272).

> generalizing study results beyond the represented Wisconsin populations (p. 64).

A fair warning, but a study focused on process, as this one at first appears to be, does not require numerical sufficiency to make it a valid study. Process is independent (and at the very least epistemologically different) to generalising to a population. Bourke and Luloff (1994) do something similar when investigating values. They note that,

> …results indicate that owners espouse anthropocentric views and stewardship values concomitantly (p. 455).

They then go onto suggest,

> …viewing environmental issues along a continuum rather than as polar opposites might contribute to a better understanding of attitudes toward natural resources (p. 455).

Using a process sociology, it is unsurprising that people (both as individuals and in groups) espouse contradictory or widely divergent positions within the same topic area. That Bourke and Luloff (1994) find it to be so is suggestive that they hold a mechanistic worldview, a worldview that incorporates remnant-positivism (which uses abstraction, reductionism, objectivism, *etc*., and so would be comfortable with placing an individual - less a person than an attribute - on a continuum).

This all said the above are only indicators of problems with the handful of authors who recognise the weaknesses in the private landowner research community and there is not enough evidence in the cases to make a solid case for such an outcome. As a final point on this issue, to a lesser extent, Kingsley, Brock and DeBald (1988); Jenkins (1998) and Lönnstedt (1997) also produce research that appears to have some sense of the weaknesses or difficulties in design and practice, although the same troubling patterning regarding a lack of methodological knowledge is found with them as well.

A cautious assessment of the above statements and in context to the other cases, is that most of the researchers' work reviewed here is, to some extent or another, found wanting when it comes to the practice-epistemological inter-link. As discussed in Chapter 1, a science is at least partly defined by the community(-ies) of peers that cluster within or alongside it. So it would seem reasonable that a cluster of like

minded researchers in the forestry milieu re-enforce not only an abstracted empiricism (with attendant failures in securing adequate epistemology-practice interlinks), but also an inadequate peer assessment procedure that if working properly might have checked some of the worst failures in practice-epistemological inter-links[14]. These issues, outside of being discussed in this chapter, will be returned to towards the end of Chapter 5.

Generally, research designs are restricted to one type

In this sub-section, it has been shown that the substantial majority of cases reviewed were extensive and synchronic, relying on some kind of questionnaire to collect data while utilising statistics to analyse the data. Reporting on the data was in ranking and, less commonly, associational forms. All these elements, when grouped as a consistent set, suggest that there is one (broad) research design type common to most of the case literature. It is the pattern here that is more important than a particular naming (which is difficult). This (broad) research design type is common to (an epistemological) remnant-positivism or analytical empiricism. In the next sub-section, this point will be further explored before a conclusion is given about the lack of diversity in ways of knowing across the case literature.

The ontological, epistemological and axiological commitments

This sub-section charts the ontological, epistemological and axiological commitments in the reviewed literature. Additionally, a rather more complex analysis tool is used here than in the previous sub-sections, as drawn from Patterson and Williams (1998). The finding of this sub-section is that most of the reviewed literature can be categorised as objectivist and deterministic. Overarching, there is virtually no diversity

[14] Although there is a general problem with the survey research elements, in all fairness research prior to and around the 1980s would not be able to make use of some of the latest improvements in survey research processes (Krosnick 1999).

amongst ontological and epistemological commitments in this literature, with only marginally more axiological diversity. This outcome continues to strengthen the assessment (drawing from the significant lack of diversity found in concepts, theory and research design) that the capacity of the reviewed literature as a whole to provide meaningfully complex and diverse accounts of how landowners (and forests/nature) may be known, is occluded[15].

What are ontology, epistemology and axiology?

In order to be clear about the use of ontology, epistemology and axiology, a set of definitions are needed.

Axiology is essentially the philosophical theory of value (what is good, what ought to be, *etc*). A simple statement of ontology could be written as (a theory of) what is (being), while epistemology may be thought of as how we know what is. These two terms though, are significantly more complex than this statement can do justice to and a slightly more involved definition is given here as:

> [o]ntology is a branch of philosophy concerned with the nature of reality. An example of an ontological statement is, “reality consists of objects in relationship with one another”. Epistemology, in contrast, is concerned with the nature of knowledge. An example of an epistemological statement is, “we can only know our personal constructs, not external reality”. The two terms begin to get confused when we acknowledge the tight connection that we find in most modern philosophical positions between knowledge and reality. For example, saying “we only have access to knowledge constructs, not external reality” is a statement about both knowledge (epistemology) and the *reality* that we only have access to knowledge constructs (ontology) (Midgley 2000: 23, italics are in original text).

It is instructive to keep in mind that ontology, epistemology and axiology are holistically interlinked. It is easy to see these concepts within a hierarchy and to separate them in understanding, but they are entwined.

[15] It is important to note that this sub-section on ontology, epistemology, and axiology can conceivably be placed in the next chapter as part of the normative analysis (as it is directly about value and belief). Instead, they are in this chapter as they exist as underlying commitments about the way the world is and are implicit to any particular epistemic frame. The normative commitment/s written about in the next chapter are largely separate to epistemic framings and usually help structure the choice of a particular epistemic frame before mixing with such frames in research (practice).

It should also be noted that methodology is an important fourth commitment in this picture, although not directly discussed here.

As all method and research design pre-supposes some mix of these commitments, it becomes important to recognise just what might be being said in a piece of research through reflecting on these underlying frameworks, no matter that they are not always expressed.

Why ontology, epistemology and axiology?

Behind *every* research decision and *every* piece of research is some understanding of what reality is, how it can be known, what protocols and injunctions are needed to affirm that knowing and what is valuable in some human state or being (Hudson and Ozanne 1988; Heron and Reason 1997; Hughes and Sharrock 1997; Morrow and Brown 1994; Holland 1999; Brier 2000; Alrøe and Kristensen 2002; Lewis and Kelemen 2002). Consequently, investigating such issues in the research literature will allow for a further assessment of the extent of diversity of ways of knowing in that literature (after Little 1991).

How ontology, epistemology and axiology were analysed

A classification by Patterson and Williams (1998) was used to explore the reviewed literature (see Table 3.13 on p. 97). Patterson and Williams (1998) reflects concern that much science (in the forest milieu and natural resource management generally) is understood through methodology (as a singular scientific method) and hence fails to engage with ontological and epistemological frameworks. Further, they argue for bringing normative structures into an understanding of science. Their article does not engage with critical realism, but many of their general concerns are reflected in the broader debates informing the philosophy of science (and the philosophy of social science, as a subfield). They also note that:

- without adequate understanding of ontology, epistemology and axiology, there can be no critical understanding of methodology, so leading to failures in meeting stated disciplinary objectives;

- how phenomena are understood relates directly to the philosophical underpinnings reflected in practice and in results, while adherence to a singular framework limits understanding; and,
- without philosophical insight, a discipline is likely to remain isolated and this further reduces any capacity to be cross-disciplinary and hence build complex accounts of the world.

Patterson and Williams (1998) outline a more complex model of (the philosophy of) science that can be used to respond to the above issues. It is more complex than that depicted in Table 3.13, which is only a part of their framework. It is shaped around an understanding of science as:

> (1) a systematic set of empirical activities for constructing, representing, and analyzing knowledge about phenomena being studied…which is guided by (2) a set of normative philosophical commitments shared by a community of scholars (Patterson and Williams 1998: 284).

They then outline the model on the idea that:

> [t]he macrostructure of science…is comprised of three levels: worldviews, paradigms, and research programs (Patterson and Williams 1998: 285).

It is within their paradigmatic description that Table 3.13 is deployed[16].

The research literature was assessed against the construct depicted in Table 3.13. Because the 32 pieces of literature are not commonly explicit about their research design commitments, a number of subjective inferences had to be made based on the extent of this author's knowledge. Many of the papers lack focus on design principles and as theoretical rigour is uncommon, assumptions are well hidden. Determining where each case should be put involved two steps: (1) reading the overall case as an entirety and getting a 'feel' for the way that the science depicted was demarked and what warrants might be in use; and, (2) reliance on the analysis already discussed in this chapter, which allows some inferences to be made about what the overarching macrostructure being drawn on in each case might be. Table 3.14 (on p. 98, as drawn from Appendix 9) depicts the results from the assessment.

[16] Even though the concept of paradigm is used by Patterson and Williams (1998), their model is used here within the idea of an epistemic analysis, which does not attempt to make the case for a paradigmatic structure in any of the reviewed literature.

Ontological commitments	Nature of reality	Objectivist ontologies	Maintain the existence of a single, freestanding reality waiting to be discovered.
		Constructivist ontologies	Maintain that humans actively construct identities, reality, and knowledge.
	Nature of human experience	Deterministic ontologies	Philosophies that view psychological functioning (eg., satisfaction, aesthetic response, and behaviour) as outcome variables dependent on or caused by isolatable environmental and personal variables.
		Narrative ontologies	Philosophies that assert human experience is more like an emergent narrative than an outcome predictable on the basis of isolatable antecedent environmental and personal variables.
	Human nature	Information based models	Those models of human behaviour that treat individuals as rational, analytic, goal driven information processors.
		Meaning based models	These models of human behaviour which portray individuals as actively engaged in the construction of meaning as opposed to processing information that exists in the environment.
Epistemological commitments	Relationship between researcher and phenomenon observed	Dualism	The researcher is detached and separate from (has no influence on) the phenomenon observed; scientific observation is an act of description.
		Fusion of horizons	Observer is not separate from the phenomenon; observation is an interpretive act, observer therefore co-produces rather than describes knowledge.
	Research process and type of knowledge generated	Linear process	Yields the answer, usually in the form of universal or generalizable laws.
		Hermeneutic circle	May express the understanding at the moment – this understanding is subject to revision; knowledge is contextual and time bound.
Axiological commitments	Terminal goals	Positivist paradigms	Explanation, prediction, control.
		Interpretivist paradigms	Understanding, communication.
	Instrumental goals	Foundationalist criteria	Internal consistency, reliability, generalizability, discriminate validity, convergent validity.
		Anti-foundationalist criteria	Persuasiveness, insightfulness, use in future research.

Table 3.13: Normative commitments underlying research (from Patterson and Williams 1998: 288)

The normative commitments underpinning the epistemic

	Ontological commitments						Epistemological commitments				Axiological commitments			
	Nature of reality		Nature of human experience		Human nature		Relationship between researcher/ researched		Type of knowledge generated		Terminal goals		Instrumental goals	
	Objectivism	Constructionism	Determinism	Narrative	Information	Meaning	Dualism	Fusion	Linear	Circular	Positivist	Interpretivist	Foundational	Anti-foundational
Strong	31	0	31	0	29	2	31	0	31	1	29	2	30	0
Weak	1	1	1	1	1	0	1	2	0	3	2	4	2	5

Table 3.14: Normative commitments drawn from Appendix 9 and assessment of the 32 pieces of reviewed literature. Three forms of commitments; strong, weak or no measure, were assessed for each sub-category (in a sub-column such as 'Objectivism') and one chosen against each of the 32 cases[17]. Thus each sub-column can have a maximum of 32 results and in some instances less. The total in a primary column can exceed 32 (such as 'Nature of reality' which has 33). This table serves as both a measure of the extent to which a sub-category (in a sub-column) compares to its sibling (objectivism at '32' versus constructionism at '1' - objectivism seriously outnumbers constructionism) and the degree to which I was unsure or sure of my assessment.

What can be read from Table 3.14 is that this author is confident that ontologically nearly all pieces (perhaps bar two) of the literature are objectivist and deterministic. This declines marginally for informational (bar two, if not three pieces). This author is slightly less confident, though still strongly confident, that epistemologically nearly all the literature (perhaps bar two, possibly three pieces) are dualistic and linear. This declines marginally again, although still with confidence, that axiologically most of the literature (barring two but up to five pieces) are positivistic and foundational. The terminal goal of positivism is renamed here remnant-positivism (and abstract empiricism is

[17] The categories of 'weak' and 'strong' follow the philosophical practice of depicting bold (*i.e.*, forthright) statements as 'strong'; and cautious or hedged statements as 'weak' (Godfrey-Smith 2003: 233).

essentially synonymous with it in this classificatory system), and this is a locus on which discussion is founded[18].

Of all the pieces of literature, twenty-four are objectivist, determinist, informational, dualist, linear, positivist and foundationalist. Eight[19], have varying differences in their commitment mixes, with five[20] recoding the most (weak) differences. Mostly, these differences are found in axiology, a little less so in epistemology and hardly at all in ontology. Only two[21] record different ontological commitments from the rest of the literature and even here this author is only able to weakly assign them. One, Jenkins (1998), with a large set of 'weak' assessments (see Appendix 9 under Jenkins) scored such due to the real lack of research design information within the (written) case. This was alongside language use and practice that suggested a more sophisticated mix of design was undertaken than was evident and that the researcher involved was aware of some of the broader commitments regarding methodology (and perhaps epistemology), though this is difficult to substantiate.

Generally, normative focus is objective and deterministic

This sub-section has discussed and analysed ontology (*i.e*., what is reality), epistemology (*i.e*., how do we know that reality), axiology (*i.e*., what is worthwhile) and although not directly discussed, methodology (*i.e*., what injunctions support how we know) in the case literature (Heron and Reason 1997). It has been found that the literature is dominated by objectivist, determinist, informational, dualist, linear, positivist and foundationalist commitments regarding the epistemic structure of private forest landowner science. From this assessment, it is relatively apparent that there is a roughly delineated and consistent knowledge system that binds nearly all of the reviewed literature. Around half a

[18] This is mainly as (remnant-) positivism represents neither too great a level of abstraction nor specificity and is one of the more common recognisable terms in use surrounding these issues, all making it easier to explore 'knowing'.

[19] Kingsley, Brock and DeBald (1988); Bliss and Martin (1989); Bliss (1992); Egan and Jones (1993); Egan *et al*., (1995); Lönnstedt (1997); Jenkins (1998); Kingsley; Sinclair and Knuth (2000).

[20] Bliss and Martin (1989); Bliss (1992); Egan and Jones (1993); Egan *et al*., (1995) and Kingsley, Brock and DeBald (1988).

[21] Bliss and Martin (1989); Bliss (1992).

dozen literature cases either evidence a straining at the edge of this or, in the case of Bliss and Martin (1989); Bliss (1992), are in possible rupture. Regardless, these results continue to tighten the overall sense that there is little diversity in ways of knowing across the research literature, all of which makes what this literature has to say about landowners (and nature) rather restricted when taken as a whole (and this includes understanding possible in-commensurabilities regarding different knowings).

The dominance of one knowledge producing system

For the thirty-two cases as a whole, the following observations have emerged from this analysis. There are significant problems with conceptualisation processes, and the kind of conceptualisation that should be going on is largely not. The concepts of management and intentionality were identified as being the most common, while management stood out as the dominant concept. In terms of theorising, descriptive, essentially a-theoretical practices were the norm, followed by theory-testing designs at varying levels of complexity. Engagement with theories of human behaviour/self was rare (with 3 cases) and there was only one case of engagement with theories of human-nature inter-relationships. In research design, synchronic, extensive designs (of type large '*n*', observational), deploying questionnaires, using statistical analysis (with concepts considered as largely normative and theory considered as largely irrelevant) were the most common. Further, problematic questions have been raised over the adequacy of epistemological-practice inter-links across numerous of the cases and potentially stretching to a significant number of them. Ontologically, the cases were generally objectivist, determinist and informational. Epistemologically, they were dualist and linear. Axiologically, they were (remnant-) positivist and foundationalist. This general statement is built from many cases that evidence this or very similar outcomes. In other words, a great deal of the case literature lacks diversity. It can be considered

across the cases, and a little simplistically, as representing a single epistemic framework (made up of the components largely listed above).

In terms of laudable research amongst the case studies, conceptually four cases stand out: Bliss and Martin (1989); Egan, *et al*. (1995); Karppinen (1998); and, Rickenbach, *et al*. (1998). In terms of theory use, four studies stand out: Young and Reichenbach (1987); Lönnstedt (1997); Karppinen (1998); Kline, Alig and Johnson (2000a). In terms of research design (where critique was essentially restricted to practice), seven cases appear to have matched the epistemological-practice interlink at least tolerably well: Kurtz and Lewis 1981; Greene and Blatner 1986; Young and Reichenbach 1987; Wilson 1992; Karppinen 1998; Kline, Alig and Johnson 2000a; Sinclair and Knuth 2000. Also a small number of papers have attempted reform of the remnant-positivist frame (at least partly by using other frameworks in research), a beneficial and laudable action: Bliss and Martin (1989); Bliss (1992); Bourke and Luloff 1994; Egan and Jones (1993); Egan, *et al*., (1995). In the end, across concepts, theory and research design, only one case comes to the fore: Karppinen 1998. It should be noted that the few designs which may lie outside a remnant-positivist frame have not been assessed directly on this important issue (in essence, this effectively comes down to Bliss and Martin 1989; Bliss 1992).

This account now arrives at a turning point where it is necessary to reframe around the concept of ideology before moving into the next chapter regarding normative analysis and before making a case for an irrational rationality[22]. Once normative and ideological issues are discussed in Chapter 4, the epistemic, normative and ideological will be brought together in Chapter 5 through the concepts of rationality and worldview.

[22] Ideology as broadly used herein, is largely a discursive and rhetorical process that has a real transformative force: "[i]t represents the points where power impacts upon utterances and inscribes itself tacitly within them [and] aims to disclose something of the relation between an utterance and its material conditions of possibility, when those conditions of possibility are viewed in the light of certain power-struggles central to the reproduction…of a whole form of social life" (Eagleton 1991: 223). A more particular definition will be given in the next chapter.

As noted in Chapter 1, this thesis draws upon science studies as well as (eco-)feminist perspectives in order to further strengthen the assertion of an irrational rationality. An important aspect discussed in Chapter 1 was the idea that scientific knowledge is social and this can be drawn out, specifically, in the idea of embodiment. Aspects noteworthy towards informing embodiment and the justification of knowledge/s include:

> ...the locatedness or situatedness of the knower, the interdependence of knowers, and the ontological parity of subject and object of knowledge (p. 331)…[b]odies are in particular places, in particular times, orientated in particular ways to environments. This places limitations on aspirations to universality, but the particular locations of subjects afford them particular advantages" (Longino 1991: 333).

In this, context is vital in three ways as it calls attention to the:

1) theoretical and value-laden assumptions held by individuals entwine with the way data are dealt with and with their evidential practices;
2) shared systems and rules surrounding research design and epistemic standpoints across a knowledge (scientific) community that set which structure might or might not be acceptable; and,
3) circumstances of the contexts people find themselves as tensioned by the way that a community signifies what knowledge should be dealt with in these contexts, and in such a way that these knowledges can be challenged if required (Longino 1991).

Continuing to draw on Longino (1991), the epistemic frameworks evident in the case literature are seen by this author as part of a process of claim and justification that are socio-cultural in form (not denying material realities either) and in which embodiment and context play an important role. A way in which socio-cultural influences on truth claims and legitimation of epistemic justification can be explored is through the concept of ideology and this will be drawn out across the next two chapters. Further, aspects of the forestry milieu are also explored and the ways landowners are known are problematised.

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4 | Normative analysis:
EMERGENCE OF AN UNFAVOURABLE IDEOLOGY

What is a normative analysis?

As has already been mooted (in Chapter 1), normative theory is contextualised within critical realism as being: "…critical of the practices which are its objects of study" (Sayer 2000: 156). In relation to such an evaluatory stance, this chapter outlines the existence of an ideology - the 'NIPF [Non-Industrial Private Forest] problem' - that is evidenced through particular language use in the literature. The primary, overt characteristic of the NIPF problem is a concentration on forest management as the penultimate concept and practice through which forest science may have a role in landowner's lives. This will be discussed here as the main normative pattern evident across the case literature.

The use of ideology in this thesis

The concept of ideology was born with modernity (Larrain 1994). The French philosopher Antoine Destutt de Tracy articulated ideology in 1796 as a science of ideas. In this, it would investigate the laws underlying ideas as the products of mental and physiological materiality. Destutt de Tracy sought to extend the advances in (natural) science of that time and to further Enlightenment goals of a rational and just society as against those of the traditional and irrational (Head 1985). For a variety of intriguing reasons, not the very least of which was that of the French

Revolution, the meaning of ideology was turned on its head and came to represent a system of ideas, thus:

> [a]n ideologist was then less someone who analysed ideas than someone who expounded them (Eagleton 1991: 63).

The concept has gained in complexity over the years, becoming contested and controversial (McLellan 1995). Eagleton (1991) lists sixteen differing uses, some contradictory and some pejorative. Consequently, it is important to be clear about the use of the concept.

Ideology is further defined and used herein as:

> …any aspect of knowledge, understood as a product or a process, and ranging from the scientific to the mundane, that plays a *casual* role in maintaining or creating power disparities in society. The concept of ideology marks a certain set of effects that can flow from signifying practices in culture, science and politics, without it being evident through any formal analysis of discourse (Lynch 1994: 207 – italics are in original text).

Ideologies are viewed in this as historically contingent, meaningful and quite functional parts of reasoning; they are an everyday element of lived experience and the conduct of science. Further, this takes a step *away* from the sense that ideology involves something (*i.e*., a power) siting beyond the subjects while controlling them in some way (Boudon 1989).[1] Although, coupled with Lynch's (1994) quote above, it takes a step *towards* determining what power struggles are of importance to social life. Eagleton (1991) gives a neat example, supposing that:

> [a] breakfast time quarrel between husband and wife over who exactly allowed the toast to turn that grotesque shade of black need not be ideological; it becomes so when, for example, it begins to engage questions of sexual power, beliefs about gender roles and so on (p. 8).

Ideology in this thesis is understood through the following five steps (and is itself constituted in steps 4 and 5) as:

1) a process and/or product (*e.g*., research);
2) that leads to knowledge on, or knowing of, something (*e.g*., on private forest landowners management behaviour);

[1] Ideology as determining what is true/what is false is not (really) a part of this particular practice. Instead, emphasis is placed on the contradictory within ideology. Also, note that ideologies can be entwined with science and they can be elementarily scientific, but they are *not* a part of science *per se* (Boudon 1989) although both are social phenomena (as much as material) (Longino 2002).

3) which is represented by signifying practices in culture, science and politics (*e.g*., in a journal article);
4) has significant (and determinable) effect(s) on the world through mechanism(s) of power[2] (*e.g*., affects policy or extension services regarding private forest landowners); and,
5) obscures, mystifies or promotes exploitive relations or actions that are to the detriment of someone, some-group or something (*e.g*., affects policy or extension services regarding private forest landowners in such a way landowners and/or researchers are detrimentally or problematically impacted).

These five steps, taken as a total statement, will be more fully discussed in the next chapter. It is important to note here that the NIPF problem is discussed across three contexts in this work and all of these contexts relate to the steps outlined above. The NIPF problem is linked to the idea of a *normative commitment* within the context of steps 1-3 above (this will be most evident in the early parts of the next chapter), where it is considered from the viewpoint of being internal to the research community (and can be considered to exist as some kind of rhetorical or metaphorical signification). In relation to step 4 above, it is used in context with the concept of *ideology* (as the problem is prescriptive – to be actioned - and can be considered to be a favourable ideology). In relation to step 5, it is used in context with the concept of *unfavourable ideology* (a point not made fully until the end of Chapter 5), as it influences research in such a way as to limit ways landowners can be known and so may be considered detrimental.

What this chapter shows, in particular, is how the (language in the) literature reflects actions or relations in the world that may be quite problematic regarding the relationship between researchers, landown-

[2] Mechanisms of power are best conceived: "…not as instruments powerful agents use to prevent the powerless from acting independently or authentically, but as boundaries that, together, define fields of action for all social actors. Power defines fields of possibility. It facilitates and constrains social action. Its mechanisms consist in, for example, laws, rules, symbols, norms, customs, social identities, and standards, which constrain and enable inter- and intrasubjective action. Actors might act intentionally within or upon particular mechanisms of power [but] even conscious social action that affects intended results interacts with and is shaped by norms, conventions, standards, identities, and other institutionalized forms of action: codified actions that are, at times, historically remote, and the effects of which are often unintended" (Hayward 2000: 30).

ers and nature. Notably, as this research does not cover the actions of researchers but instead infers from their writings what may be going on in regarding their actions, caution should be the byword in assessing the merit of the argument presented in this chapter. That said, as this chapter unfolds it sets the groundwork for Chapter 5 to make the argument that across many of the cases there is an expectation on behalf of the researchers writing the cases that their work will have 'significant (and determinable) effect(s) on the world through mechanism(s) of power' (see point (4) on the previous page). The argument will then be finalised that such a situation obscures, mystifies or promotes exploitation of landowners (and one might argue nature) and has a detrimental impact on the private forest researchers themselves. These issues are depicted through the ideology of the NIPF problem that is discussed as an unfavourable ideology within private forest landowner research.

Exploring the ideology of the NIPF problem

To explore the NIPF problem, the language in the case literature has been analysed and put into a framing that suggests an identifiable ideology across most of it[3]. The analysis draws on the reviewed case literature, except where noted[4]. As the literature from the United States of America dominates this means that the analysis is USA-centric, al-

[3] The NIPF problem is directly and indirectly evident in many of the cases, but not all. Wilson (1995) is a case in which it is not evident, although the author is not from within the forestry milieu and may be unfamiliar with the NIPF problem. Another case where it is not evident is that of Broderick, Hadden and Heninger (1984). They are from within the milieu. Cases without direct evidence of the NIPF problem are not considered by this author as a substantial concern, as the normative is not always easy to tease out of the cases nor is it unsurprising that some cases may not have this particular normative issue as an underlying concern. This all said, implications of management (as concept and practice) are ubiquitous throughout the cases.

[4] It needs to be stated that this practice strongly strips the written work of the context in which it was originally constructed, and it is only through some degree of inference about the general conditions of the forestry milieu that an ideology can be suggested. Nominally, to obtain greater assertability, for instance, an analysis of the history of the forestry milieu and the practices that constitute research would need to be conducted (*i.e.*, prior to the writing of a piece of literature) and an analysis of how the literature was utilised in some organisational or institutional context or how researchers activated their research as an applied activity as well (*i.e.*, after a piece of literature had been written, published and perhaps shaped in the world by the researchers or research community) (general examples in the science studies literature which investigate science in practice include Atkinson 1978; Traweek 1988; Keller 1996; Rheinberger 1997; Knorr-Cetina 1999; Latour 1999).

though the general problems outlined in this sub-section have a degree of commonality across most of the case literature. It will be suggested that the ideology of the NIPF problem, within the context that foresters can generally said to be operating, is internally coherent, evidentially supported, entirely meaningful and honestly propagated as a public good by forest milieu researchers. Regardless, it is discussed in Chapter 5 as part of an irrational rationality that restricts the potential of forest science as it does not adequately attend to the complex lives of landowners and forests and consequently fails to promote broader uses of forest science in landowners lives.

The NIPF problem defined

For many researchers across the reviewed literature, one of the primary facts regarding private forest landowners is that they control a large amount of forest land in a society that appropriates forest for products through a state supported, capitalist market system. In the United States of America, there are around 16 million NIPF covering 59% of the forests in the country (see Kuhns, Brunson and Roberts 1998). This has been linked to concerns over the continued and consistent supply of timber. There is said to be:

> …uncertainty about the dependability of timber supply and whether government programs can affect that dependability…(Blatner, Baumgartner and Quackenbush 1991: 90).

It would appear that the majority of opportunities for increasing timber production in the USA can be found on NIPF lands (Young and Reichenbach 1987). A similar kind of situation exists in Finland, Norway and Sweden, where Lönnstedt (1997) notes that:

> …non-industrial private forest (NIPF) owners own more than half the forest area. They hold a key to the supply and increased use of forest resources, and to the successful implementation of environmental policies. In Finland and Sweden, the forest sectors are important economically, especially for the balance of trade and employment. Thus it is in the interest of the society, the forest industry, and the NIPF owners, that the industry be properly supported with timber (p. 302).

The situation is known as the NIPF problem. It refers,

> …to the role of NIFPs in contributing what is perceived to be their share of wood products to society (Egan and Jones 1993: 40).

It is a contemporary problem, fed by evidence that the numbers of NIPF landowners are increasing and their interactions with forests are diversifying significantly beyond timber production (Kuhns, Brunson and Roberts 1998). This potentially threatens the maintenance or potential increase in timber production from NIPF landholdings.

Before delving into the conceptual apparatus of the NIPF problem, it is helpful to understand that researchers see themselves as having a capacity to influence the world outside of their research domains, notably in relation to step 4 of the ideology definition (on pp. 104-105).

Researchers as activating the NIPF problem in the world

There is a long history of active involvement by the professional forestry elite in the USA regarding influencing policy and practice:

> [t]here is perhaps no other single collection of individuals that has received as much attention in forestry circles as the private forest landowner. This class of landowner has been singled out for in-depth study since the early days of forestry. Major [forestry] studies conducted during the first part of this century included the Capper Report, the Copeland report, and several others. Results of these investigations have been translated into major legislative initiatives. The *Cooperative Farm Forestry Act* of 1937, the *Sustained Yield Management Act* of 1940, and the *Cooperative Forest Management Act* of 1950 are but a few (Schuster 1978: 1).

The policy community, extension officers and the public are consistently linked in such reports and legislation as well as in the examples discussed later herein. Researchers believe they can inform debates and influence outcomes. For example:

> [i]nformation from the studies discussed in this paper can be used by natural resource professionals to plan for the future need of the [state of Virginia's] NIPF owners…(Birch, Hodge and Thompson 1998: 8).

The words 'can be used', in the above quote, suggest that the researchers are interested in seeing their work translated into practice. This focus is evident in the European case literature as well:

> [t]he results of this [Finnish] study can be used in planning and implementation of public forest policy. A knowledge of the values and objectives of forest owners is important especially when matching the supply and contents of forestry extension services to the varying motivations of forest owners (Karppinen 1998: 54).

Policy makers are linked to the understanding of what landowners objectives are as mediated through what the researchers present, hence the services that should be provided are designed to reach goals largely articulated from within the forestry milieu.

The NIPF problem partly emerges in these quotes through the implied place the researchers hold in legitimately defining the research framework in which landowners respond and from which the researchers can infer what is to be done, while seemingly being neutral in that act. Landowners are then seen as having stated their needs for policy and other service providers to respond too. Jenkins (1998) provides an Australian example of this:

> [i]t is anticipated that the findings of this survey will be of interest to a variety of individuals and groups involved with farming, revegetation of farmland, conservation and policy making (p. 1).

Further, this can be seen alongside another Australian example, Dettman, Hamilton and Curtis (2000):

> [t]his research revealed some of the values and concerns landholders hold with regard to their native vegetation, and provided information to develop policy mixes appropriate to different landholder groups (p. 104).

Not all of the reviewed literature is articulated around the NIPF problem or easily recognisable aspects of it, but the underlying point is consistently made that the researchers as a group see themselves as active in the world, and this translates to a rhetorical engagement with a predisposition towards objectifying people (and nature) across nearly all of the literature. From that position, rather problematic attitudes (such as overcoming the NIPF problem directly) can be legitimated in and of themselves, in such a way that it appears that landowners need *x* or *y* service as established by the 'neutral' researcher. This is what leads to the NIPF problem being characterised by this author as an unfavourable ideology (in what follows).

The NIPF problem conceals landowners and nature as other

Step 5, on p. 105, is discussed here in the way landowners (and forests) may be detrimentally affected by the ideological framing of the NIPF problem that overtly allows their interests to be interpreted by researchers who are well-divorced from the landowners' day-to-day lives. The social good that underlies the NIPF problem is also drawn out.

The NIPF problem carries an injunction that landowners must be made to alter their behaviour so as to provide timber for the social good (nation-state and economy), and/or engage in forest management as suggested by forestry professionals, again for the social good. This has a particular meta-theoretical frame that is depicted at its zenith by Young and Reichenbach (1987). They put forward eight ways in which landowners can be influenced in such a way that they may decide to increase timber production:

> [t]his study indicates that many forest owners in Illinois do not intend to produce timber or other wood products on their land within the next 10 years. If the goal is to increase production from these lands, then the number of owners who intend to grow timber must be increased. The social/psychological model used in this study provides a framework for determining effective ways for changing intention and thus behaviour…To increase the number of owners who intend to produce timber, new programs would be designed to change the beliefs of the non-intenders…[for example]…decreasing the strength of association between producing timber and disrupting nature…changing the evaluation of the effect of timber production on natural scenery from bad to good…[another six ways are given]…At the same time, emphasis should be placed on the compatibility of timber harvest and enjoyment of the natural scenery, increased wildlife, enjoyment of nature, and recreational activities…In practice, it is difficult to change a person's motivation to comply. Therefore, persuasive communication should focus on increasing the strength of the belief that their family and the Department of Conservation wants the forest owners to produce timber…(pp. 390-392).

Here, landowners are seen as something to be acted upon and stripped of agency they are incorporated into a structure designed to manipulate them towards outcomes that meet the requirements of overcoming the NIPF problem (unspoken or not).

The kind of language use evidenced in Young and Reichenbach (1987) continues in Kurtz and Lewis (1981). They recognise that timber production is, "…not the primary objective for the majority of NIPF owners" (p. 285), yet significant holdings of commercially viable forests are held by NIPF, with attendant demands for other uses. This, the author's see, is a conundrum:

> [i]f clientele can be defined through their expressed interests [towards management], program content and delivery can be adjusted to bring about increased management for timber (p. 285)…The most effective means to encourage timber management appears to be through the constraints component of the decision framework. Changes there can result in modification of the owner's objectives and motivations and ultimately his management strategy (p. 288)…[So to] the timber agriculturist it might be pointed out that harvesting provides the best means of insuring sustained productivity…for the timber conservationist [programs] might emphasize the maintenance of a stable resource…[for the forest environmentalist]…it should be stressed that timber harvesting is compatible with a healthy and aesthetically pleasing forest community…For the range pragmatist [akin to a woodland owner/manager] , business orientation should be the focus for appeal, emphasizing that trees represent investment potential that should not be ignored (Kurtz and Lewis 1981: 288).

An Australian example is available and similar to the two cases so far cited. In response to landowners who held lower quality forests, and who felt that their forests were not worth harvesting commercially, the author's state: "[h]ere again it seems that some re-education is indicated" (Tasmanian Forestry Commission 1982: 16). In response to the turnover of private property, the author's lament that new forest areas may open up but that there would also be a continued influx of owners who did not wish to harvest so:

> …keeping a constant proportion of private forests, though not necessarily the same areas, locked up (Tasmanian Forestry Commission 1982: 17).

A similar European example is provided by Lönnstedt (1997):

> …it is in the interest of the society, the forest industry, and the NIPF owners, that the industry be supported with timber (p. 302)…Furthermore, the results [of this research] give timber buyers, forest owners' associations, and policy makers a better understanding of NIPF owners' decision processes…For the

> forest owner, these results are likely to improve the development of information, support and technical help (p. 308).

In these and other examples, researchers deny a human connection to those who have been researched, through the administration of a rational, detached, universal perspective which transcends place and context as well as harking to a truthful rhetorical space from which to achieve a (supposedly) socially desirable outcome (after Plumwood 2002).

No doubt the researchers are good and decent people, but the outcome of their interest in and use of the ideology of the NIPF problem and its attendant ideas about science, what it is to be human (and of nature) plus their alliance to the organs of the state and capital have merged and produce a realm which:

> …excludes relationships of care, sympathy and engagement…[but where]…the knower is construed as one who can change the other to make conform to desire but who cannot be themselves changed by this other (Plumwood 2002: 42).

It is argued here that behind such statements as made in Lönnstedt (1997) and Young and Reichenbach (1987), for instance, is an implied social good. Already it has been suggested that this social good is set and influenced by forestry's connection to capital and the state, traditionally powerful actors amongst the forests, and this will be briefly substantiated next. Regardless, it can be said that the social good understood by the forestry milieu researchers is generically applied across the board in such a way that it underpins the more obvious aspects of the NIPF problem, such as the need for timber production and management. What this means is that even when a particular discourse, such as management for timber production, comes under pressure (for whatever reason) another discourse can readily be slotted into place without overtly disrupting the way forestry research into the social is practised[5]. This is evident in the recent fading of the management for timber production discourse and the strengthening of the sustainable

[5] In this thesis, ideology has been used in such a way as to 'swallow' up the concept of discourse, although specific discourse studies (for example see Geno 1999) and similar allied studies (for example see Kennedy, Thomas and Glueck 2001) are available on forestry based issues.

management discourse. In this, the NIPF problem is effectively left intact - its epistemic and political marginalisation of landowners and forests, alongside its dispassionate framings that so de-personalise landowners as other or objects, are secured.

A social good of the forestry milieu explored[6]

The social good concentrated on here, and the goals that are manifestations of it in the forestry milieu, are carried in interlocking institutional and organisational cultures that are historically complex (see Kennedy, Thomas and Glueck 2001; Dargavel, Agnoletti and Johann 2004). It is possible though, in looking at Australia and the USA, to discern some basic patterns. Foresters have had an older, professional role that assigns a central place to conserving forests against depletion (*e.g.*, clearance for agriculture). This was done, at least partly, in order to secure a consistent supply of timber for the future (Demeritt 1998; Young 2000). Such a focus, in particular, stems from forestry companies and state forest services which exert a powerful affect on the milieu overall and through which much of the social good may be said to be structured.

In Australia, the role of forestry has moved through simple reproduction of the resource to expansion and promotion of industrial development alongside, of late, multiple use and sustainable forest management (Dargavel 1995; Geno 1999). Regardless, the consequences of having a committed industrial base within the milieu has fed a tacit comfort or agreement with economic development as a guarantor of human progress. There occurs alongside this a longstanding familiarity with the administrative state and bureaucratic systems that contribute to conformity and conservatism in social action, as reinforced by the close-knit nature of the forestry milieu (Dargavel 1980; Young 2000; McManus 2002). Further, there exists a mechanical, linear, reductionist and quantifying understanding of reality (a scientific worldview) that supports interventions in the world (Demeritt 2001; Kennedy, Thomas and Glueck 2001). Summing these three contextualising

[6] This section on the forest milieu and a social good is simplified and generalised.

components of the social good, at least as they may be understood by those in the forestry milieu, is that it all amounts to a:

> …sort of social engineering under which rational scientifically managed supply of timber to capitalist industry was equated with social stability and development in rural communities (Prudham 1998: 178).

Sociologically, an additional caveat can be added here that adds further complexity to this context. That is, capitalism is inherently dynamic, constantly re-configuring the means of production not just technically but also socially and geographically as tensioned by the material, by general conditions of governance and by intensely local contexts of struggle and (social) re-production (Smith 1984; Beckley 1995; Prudham 1998; Lugg 1995). Although much of the raw production of resource occurs in rural areas, as capitalism has moved again into an intensely globalised phase, accumulation has flowed to and being controlled from centres of financial and governmental power (mostly in the cities). This has helped the survivability of the underlying social good in the face of contradictions in rural development stemming from the activity of (forestry) capital and in pressures from interests embedded in the cities about how forests are used. None of this though, in today's world, is a given, especially in a society where there is a growing level of contingency between many diverse publics in communication with each other (Delanty 1999). In other words, the forestry milieu's social good is not necessarily beneficial to either the milieu or society generally, no matter its survivability.

There are a set of core conditions which emerge that stabilise the social good in the forestry milieu, namely that it is to those in the milieu:

- coherent - as foresters perform a necessary role in conserving forests in economically and socially productive landscapes for the future;
- evidentially supported - in the role that foresters have played in shaping forests for the national good;
- meaningful - in that the social good is as much an ethical and moral system that guides foresters as professionals; and,

- honestly propagated - as much of the structure of our societies legitimate progress through capitalist economic development and through science as a moral system.

As an interlocking whole, these conditions at the level of the individual as reinforced in the broader context of the forestry milieu provide a basis from which interventions in the world are structured.

It has only been in relatively recent years that the social good has come under serious pressure, notably with the rise and ongoing persistence of the environmental movement (and environmentalism generally) (Pepper 1996; Geno 1999; Hutton and Connors 1999). The most obvious site of contention is over the idea of forests as a managed crop and as a form of working capital, although this remains a highly contested space (Bridge and McManus 2000). Aspects of the mechanical perspective (worldview) have also come under pressure, mainly internal to the milieu as stemming from changes in ecological insight. The bureaucratic components remain relatively undisturbed. From this, and it is somewhat of a truism, forestry is in articulation with a set of cultural and socio-material systems that make an organisationally clear and institutionally stable (near and longer-term) future for the milieu highly unlikely. Aspects of this debate, querying ongoing and substantial changes in the forestry milieu, can be picked up in a wide swath of literature both inside and outside the milieu (see for instance: Hammond 1991; Maser 1992; Luloff 1995; Marcin 1995; Calver *et al*., 1996; Calver *et al.,* 1998; Donaldson 1998; Kanowski 1998; Race and Buchy 1999; Brown and Harris 2000; Konijnendijk 2000; Mercer 2000; Elands and Wiersum 2001; Kennedy, Thomas and Glueck 2001; Kimmins 2002; Lane 2003; Lindenmayer and Franklin 2003; Perley 2003).

At the centre of this current set of difficulties is that forestry science itself is quintessentially a ‘child’ of the Enlightenment (emerging in Europe during the 18th Century), committed to rational action through piercing the true nature of the world in the appropriation of nature for production. Forestry, at its core, is focused on predicting what trees and forests will do under certain actioned prescriptions that makes the idea

of management central to forestry and one of the most obvious physical (actioned) manifestations of the underlying social good (Binkley 1998). Such a management platform fits well with the activities of capital and the state. It could also be argued that this is a trap for the milieu. Notably, this is a trap as shifts in the socio-material have not been readily or reflexively engaged with yet modernity requires reflexivity (both at the personal and institutional level) so that tensions of fragmentation and integration that are indelibly a part of it can be handled[7]. At least within the private forest landowner literature, there appears little attention to just how problematic management as a concept and practice is. This is especially so in cultural and socio-material domains where the forestry milieu social good, at least partly predicated on contexts several hundred years old, remains wedded to the troubled institutional forces of capital and the state in the structuring of practice.

The problematically multi-purpose concept of management

Recently, the NIPF problem has become less focused on timber production and more focused on increasing the uptake of sustainable forest management (for a multitude of forest values) or its ilk (*e.g.*, ecosystem management). For instance, Kline, Alig and Johnson (2000a) recognise that the forestry discipline is now taking an increased interest in NIPF lands for:

> …producing non-timber services, such as habitat for endangered species, watershed protection, and carbon sequestration (p. 303).

The concept of management captures all of this as part of the NIPF problem. Management appears on the surface as a reasonable, all-round and generic concept that encapsulates what landowners clearly need, yet it remains curiously ill-defined.

Management is commonly presented as a norm and stripped of it's context, *e.g*:

> [t]he challenge is to inform and educate the nearly half-million NIPF owners [in Virginia] so they understand and accept the benefits of management (Birch, Hodge and Thompson 1998: 9).

[7] A definition of modernity can be found in Chapter 1, p. 3, n. 1.

As has already been discussed, landowners are depicted in much of the research as being active in making decisions about their properties, but passive in their receipt of management expertise and its inherent good. For example:

> [i]f clientele can be defined through their expressed interests [towards management], program content and delivery can be adjusted to bring about increased management for timber (Kurtz and Lewis 1981: 285).

Further, management in both its more recent form, as sustainable forest management (or ecosystem management) and in its older form, as timber (production) management, carries the message of a calculable reasoning often excluding or minimising any other way of understanding. For example:

> [t]he value in understanding owner attitudes and behaviour ultimately lies in improving foresters' abilities to work with PNIF [Private Non-Industrial Forest] owners toward increased forest management. The focus of owner assistance, both public and private, should be on maximising returns, measured in terms of increased management activity (Marty, Kurtz and Gramann 1988: 197).

In such approaches, the landowner as a relative equal in the knowledge demarcation process in regard to researchers seems to have been lost. Rather, researchers consistent lament is that landowners need to be encouraged towards managing and to do so as directed or seeded by the professional elite. Researchers assume that every act on or in a forest requires management intervention. For example:

> [a]ll the ownership objectives specified in the surveys could benefit from planned management. Much of the state's forest lands are used for recreation. Recreation includes hunting, camping, and fishing, as well as hiking and more passive forms of recreation. Management for wildlife and recreation requires a variety of silvicultural and management practices, which could include selection cuts, regeneration cuts, and thinnings (Birch, Hodge and Thompson 1998: 8).

It is not so much that there is anything intrinsically wrong with timber production or management generally (outside of its ejection from any discursive realm as anything but an automatic good) it is just that nearly every debate gets dragged back to this persistently central concern of the researchers. They always set the boundary of the debate in which

the interests of who is being served are clouded. One wonders what the mass of landowners would make of this if they read the literature in any depth.

This is not to say that landowners are unaware in the debate that they have no effective say in the way they are known and the way prescriptions are made about them. The ideological dimension to management may be recognised by landowners sensitive to certain of its dimensions. Management, in a general sense, is about control, adjustment, direction, treatment, *etc*. It presupposes direct human intervention when discussed in relation to forests (nature). In this sense, it also presupposes the application of some kind of knowledge (as practice). Again, in a general sense, landowners interested in preserving, valuing or relating with nature in personhood (Milton 2002), for instance, may object to the idea of management - or at least management that is attached to certain kinds of knowledge (like forest science and the implied sense of management for timber production that can come with it). Persistent controversies over management practices speak loudly to this point that foresters and scientists generally are not:

> …the only actors of consequence when it comes to constructing the nature of the forest (Demeritt 1998: 185).

It should be noted that no suggestion is being made that management is not a concept worthy of consideration, just that it is deployed unthinkingly far too often, is a poor concept to contain the complexity it often has to carry and that its historical roots in particular contexts are so concealed that it is neither obvious nor necessarily to anyone's long term benefit when used.

Another aspect of the underlying conceptualisation of the world which does not change with this shift in management discourses is that of how nature is depicted, an issue dealt with next.

Disappearing nature

In the case literature, the granting of agency to landowners, no matter a truncated agency, can be compared against the failure to recognise

forests or trees (nature) as having much if any agency at all[8]. The granting of agency to nature has become more common in the social sciences over recent years (FitzSimmons and Goodman 1998; Jones and Cloke 2002), but amongst the more recent literature cases reviewed herein there is a clear lack of engagement with such a concern.

Even when forests and trees are granted agency, that agency is only valid in light of landowners' interests, *i.e*: "[f]orest lands produce many benefits for their owners…" (Birch, Hodge and Thompson 1998: 5). Further, there are implicit suggestions of inter-relationships between forests and landowners where the agency of forest has an impact on potential landowner (or human) response, for example:

> [h]abitat enhancement opportunities on northeastern private forest are attractive not only because of the large acreage of the resource, but also because the forests themselves are becoming silviculturally mature and management options are commercially available (Brooks and Birch 1986: 109)

Unfortunately, what needs to be recognised here is that even when such implicit relations are suggested it is highly unlikely that the researchers are actually recognising some aspect of nature having agency, rather, it is an inadvertent outcome of the writing style chosen.

The result of the disappearing of the forests and trees from inclusion in any relational or ethical framing means that there is no imaginative engagement with the consequences of human action on forests and trees. Rather, it is cauterised within the epistemic framing of forestry science itself where the epistemic authority is seen as being apart from contestation over social action. Even with Bliss and Martin (1989), the research design perhaps best equipped to deal with this issue, only on a few occasions can it be inferred that understanding has been framed to capture the relational of human and forest. For instance, Bliss and Martin (1989) cite the case of William Krueger who had established a relational or emotional context with the trees he had husbanded over the years (and starting in this quote from Bliss and Martin (1989) with their words):

[8] Agency is, "…the power of actors [persons or 'other life'] to operate independently of the determining constraints of a social [or overarching] structure" (Jary and Jary 2000: 9).

> [t]he longer the history of involvement, the more the manager comes to identify with the property. The forest itself becomes an extension of his or her identity. William Krueger suggested this when speaking of the first harvest in his woods to be conducted by someone other than himself: "*Part of me got cut every time they cut one of those big trees. Oh! That was a tough one! That was tough for me to do that!*" (p. 616 – italics are in original text).

In the end, it is evident that the idea of more complex inter-relationships that gives nature even some minor degree of agency (either theoretically and/or empirically investigated) is not adequately entered into within the reviewed literature.

An unfavourable ideology: The NIPF problem

It has been posited that there is an ideology, that of the NIPF problem, evident in the reviewed literature which exists as a largely implicit good regarding the way that researchers believe that forests held by private owners should be understood and dealt with. In this social good, the researchers study objects, notably landowners and nature(s), whom are politically neutralised (in the research) and for who the researchers are epistemically divorced (*i.e.*, they do not share lived experience in the building of justified knowledge within each particular research space) (after Heron 1996). This author argues this is a bad when it represents effectively the *only* way people and nature are understood and engaged with. It is especially so considering the increasing choices offered by the social sciences and philosophy of science in understanding the world alongside continuing tensions over the uses forests are put to in many Western societies. It has been further suggested that the social good, as manifest through a variety of management discourses that have changed over time, remains intact to this day regarding structuring research on private forest landowners no matter the change in management discourses (*e.g.*, from timber to sustainability).

It has also been suggested that the ideology of the NIPF problem, with its underlying social good (within the context that foresters can generally said to be operating) is internally coherent, evidentially supported, entirely meaningful and honestly propagated as a public good,

by those (from the case literature) in the forestry milieu. The problem, as already inferred during this chapter, is that the social good may not necessarily be an appropriate good in today's world, either to landowners, nature or foresters. This makes the ideology an unfavourable ideology in this context. The dimensions to this unfavourable turn for the ideology will be further explored at the end of the next chapter when the single epistemic framing evident and epistemic-normative inter-links in the 32 literature cases are brought together with the unfavourable ideology to suggest an irrational rationality.

◆ ◆ ◆ ◆ ◆

5 | Linking the epistemic and normative in a research rationality:

EMERGENCE OF AN IRRATIONALITY

What are epistemic and normative interlinks?

This thesis has so far explored two of the three aims set out in Chapter 1. The first was to discover what epistemic and normative commitments are evident in the literature on private landowners and forests. The second was to determine whether there are patterns of epistemic and normative commitments that dominate the literature. A reasonable case can be made that there is only one way of knowing represented in the literature reviewed in Chapters 3 and 4, and that a particular normative commitment - the NIPF problem - is powerfully evident and entwined with that knowing. The first part of this chapter investigates how the epistemic (what is) and the normative (what ought to be) influence each other, an aspect vital to the conclusion that is drawn from the findings of this thesis. The second part of this chapter then responds to the third and final aim to determine what the patterns derived from the out-come of the earlier aims may mean for the future of forestry science.

Knowing landowners: The how and why of it

In explaining what an epistemic and normative interlink is, it is necessary to recall an important dimension outlined in Chapter 1 (pp. 32-33) about the epistemic and the normative. Essentially, the epistemic is a form of belief (embodied/artefactual knowledge) that has been justified and fixed through an evidential process as confirmed by a community. The normative is a belief (*i.e*., a proposition considered to be true), which contains an implication about what ought to be (*e.g*., private landowners should produce timber) and/or about what is but in a manner where evidential, community-secured consensus is lacking. Both exist in each of the 32 cases reviewed herein. Further, each of the cases can be considered as an example of a certain kind of artefactual, representational knowledge. What may be shown through a reading and analysis of a text is that the (represented) knowledge contains forms of practice which qualify as (scientific) content/knowledge within some community (that is, it can be considered as epistemic). The normative can also be drawn out, though in a manner not so easily depicted. Content has further normative elements that come embedded with the (scientific) content and practices, and also another normative commitment which begins in the text as a separate commitment or belief, but which as the text unfolds becomes inculcated in the epistemic.

Rather simplistically (and to be made more complex further into this chapter), the epistemic-normative interlink is evidenced in an accomplishment - between the text and a reader - of validity or reasonableness regarding a mix of the epistemic, the normative roots of the epistemic, and a, at least initially, largely independent normative commitment. To clarify, there is one link between the epistemic and the normative that comes ready built in the guise of the choice and practices used in each case example. There is a second type of normative commitment that is generally evident in the cases as well. It comes to inhabit part of the structure of the epistemic. An example is a

hypothesis that gets hybridised with the content/knowledge in research practice.

This chapter begins by charting three issues: (1) an epistemic (*e.g*., a theory of behaviour); with, (2) normative commitments embedded in it (*e.g*., all reality is material); and, (3) normative commitments that largely begin outside of the epistemic but shift into the epistemic as research is practised (*e.g*., a statement (or hypothesis) regarding the relationship between the perceived impact of timber production on forest and future intentions to produce timber).

In Chapter 3 and 4, there is an implicit suggestion that epistemic-normative interlinks exist, but the generalising approach of the chapter precluded their exploration. This sub-section on how landowners are known rectifies this and details epistemic-normative interlinks.

The case examined is that of Young and Reichenbach (1987) from the United States of America. Young and Reichenbach (1987) is referred to as 'YR87' from here until the end of the case example. This is one of the cases which stood out as conceptually clear, having a relatively robust research design and as having a good match between epistemology and practice. It should be noted though, that it also depicted a problematic ethical standing by suggesting that landowners' behaviour could be changed (towards producing timber) through applying the research results. Most importantly, considering the focus of this thesis, it was one of the few cases that *explicitly* used a causal, propositional theoretical model for understanding. In this, it can be considered an exemplar of the research type (objectivist/remnant-positivist) when compared with nearly all the other cases. Such an explicit use of theory allows at least some of the normative elements embedded in the science product to be confidently engaged with in describing the epistemic-normative interlink (depicted in Figure 5.1). The case provides an example of a social order commonly envisioned within the forestry milieu by researchers of private landowners, although actual particulars vary between cases.

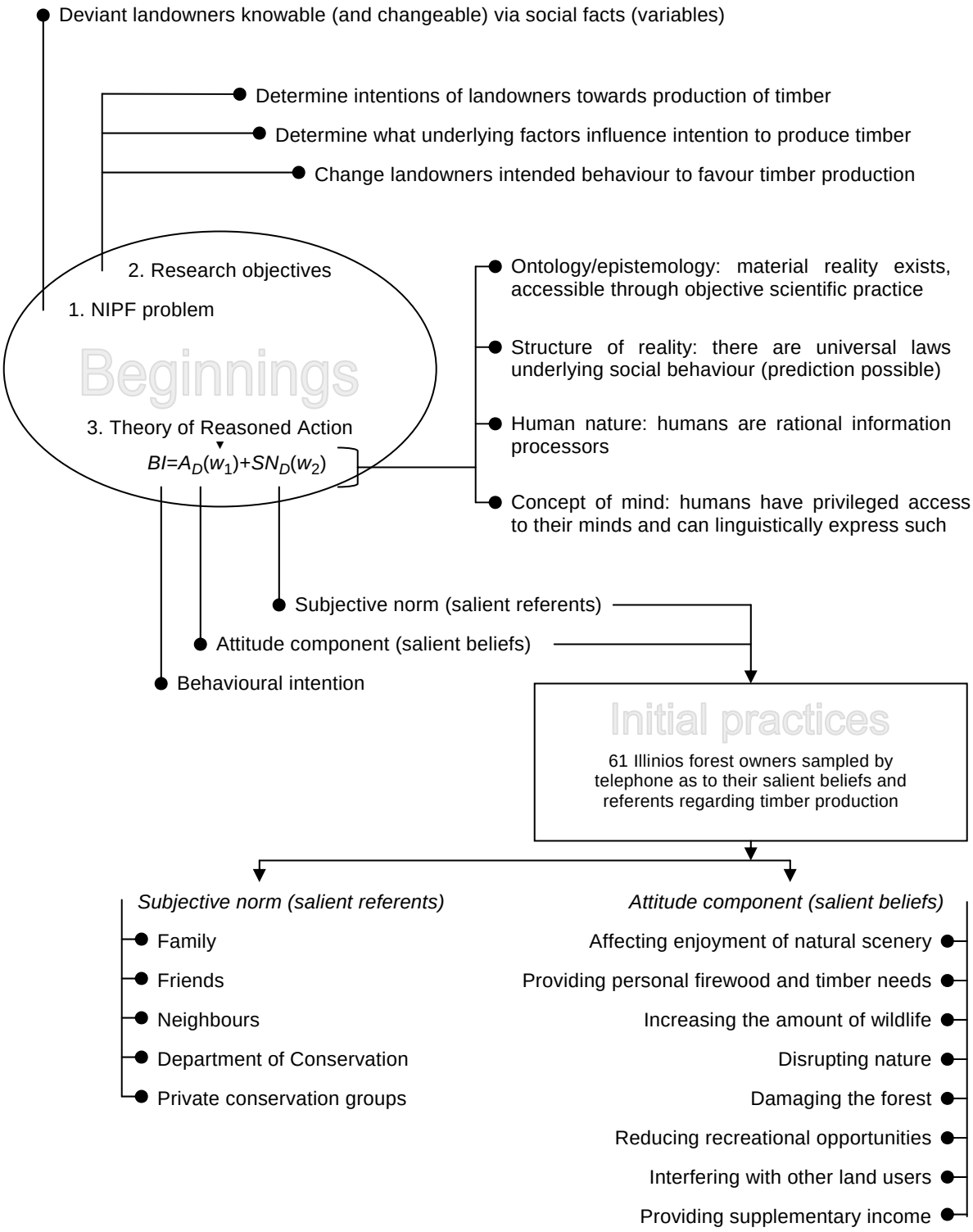

Figure 5.1: Young and Reichenbach (1987) text as evidence of a social order – this is the textual reality effect that *pre-exists* (in other words, was completed before) their main survey of 1748 potential respondents

The social order is established by YR87 as they bring, in theory, a model of human behaviour together with a set of research objectives which have been constructed via the NIPF problem - depicted in Figure 5.1 as 'Beginnings' - YR87 mesh their beginnings with a set of practices - depicted in Figure 5.1 as 'Initial practices' - that capture landowners as fully knowable *before* the results to their research are presented. All extraneous contexts are removed by the authors and this is a particular process unique to the case, but which is also reflective of a scientific worldview that patterns the broad approach undertaken in their research. This worldview has been discussed in short, through the epistemology of remnant-positivism[1]. The elements shown in Figure 5.1 are discussed as the chapter unfolds.

The question of social order in analysing Young and Reichenbach (1987)

In this analysis of epistemic and normative interlinks, two different understandings of social order are detailed and brought together into one[2]. They are: (1) description of the way meaning is made between people and an (knowledge) artefact (*i.e*., a case text); and, (2) paring away the elements of knowing (in the text) so as to discuss its parts. The primary difference between the two is that the first does not assume that social order is externally imposed, while the second does. The first holds that:

> …groups of humans create and sustain for each other the *presumption* that the social world has a real character… (Turner 1991: 472 – italics are in original text) [3].

The second kind of social order comes with the epistemological analysis herein. This social order has people in their day-to-day

[1] A more contextualised assessment of what remnant-positivism (and abstract empiricism) is, can be found in Appendix 10.

[2] This is an effort to use not only a reductionistic (epistemological) meta-language, which problematically and implicitly suggests science can be demarked, but also a rhetorical, metaphorical and common-sensical reading of text that disrupts any neat boundaries (after Taylor 1996).

[3] The quote of Turner's (1991) is about ethnomethodology. Turner (1991) though, does not hold with the extent to which ethnomethodology accounts are radically different, so suggesting they can be theorised into or at least alongside mainstream sociological accounts, which is the case here (within critical realism). For some parts of ethnomethodology such a position would be unacceptable as it misrepresents what ethnomethodology is (see Lynch 1993).

activities unconsciously reproducing the structures which help determine, or delimit, their performances – although they are occasionally capable of transforming these structures as well (Bhaskar 1989).

Here, the case is presented by working through it as it would be read and then re-describing it from the perspective of this author on how a textual reality effect was arrived at (after Green 1983). The re-description of social life involves depicting how researchers go about determining reality and what is legitimate knowledge as elucidated through *their account* of *their practices* as *their readers* may understand them (as notably undertaken through description, metaphor and analogy). It also includes an elucidation of categories relying on theorisations remote to the researchers (*i.e.*, through epistemology). Social order, in this thesis, is thus constituted through common sense meaning-making as it unfolds between people and artefacts as well as through embodied and broader structural elements in the world that are explicitly open systems[4].

The case of Young and Reichenbach (1987)

YR87 essentially ask two questions: (1) what factors influence Non-Industrial Private Forest (NIPF) landowners' intentions to produce timber or other products from their forests? (2) How might their behaviour be changed to favour producing timber? They use a social psychological theory, the *theory of reasoned action*, to predict behaviour. They obtained 621 usable responses from NIPF woodland owners in a sample (telephone) survey and analysed the data statistically. They found that, on the whole, landowners' intentions to produce timber or other forest products were negative. They suggest a number of steps stemming from the application of the theory of reasoned action which can be used to alter landowners' behaviour and so increase production of timber or

[4] Clearly, this research is caught up in the same phenomenological dictation of social order as in the reported case of YR87, although contextual ambiguity is more comfortably engaged with in this thesis. The influence of critical realism is evident in such comfort, notably drawing from the idea that society cannot be identified "independently of its effects…it can only be known, not shown, to exist" (Bhaskar 1989: 82). Consequently, the process here is *necessarily* and comfortably incomplete.

other products. This sub-section shows how this rather standard but potentially powerful understanding of landowners coheres as knowledge and why it is broadly restrictive.

It is important to note that we are examining here two sets of normative commitments, one internal to the epistemic frame and one that is largely (and initially) external but which influences the choice of epistemic frame and then becomes involved with it. The first pre-configures what landowners are and confirms how their behaviour might be changed. The second will be shown as it gets into the epistemic, where landowners are then realised as a knowable, essentially deviant, but workable and bureaucratic (*e.g.*, controllable) problem. As will be explained, the re-description of YR87 hypotheses proceeds along the lines of asking: 'how do landowners get to be defined (*i.e.*, known) as *non*-timber harvesters, a class deviant from the norm of timber-harvesters?

Young and Reichenbach (1987) and the textual reality effect

YR87 text is an artefact, notably a kind of managed knowledge artefact known as a journal article. The writing and the reading of the journal article is a particular local accomplishment (in its initial writing and in *every* reading) that (in the end) involves the evocation of a reality effect that allows the real-world depicted to be encountered as is by the reader (after Green 1983). The process reflexively orders landowners as totally knowable. The reality effect can be seen in a set of common-sense ideas about the world which readers (can) tacitly understand and engage with (as an outcome of shared cultural context). The effect is partly constituted by the stable, social relations embedded in the institutional structure of society. If the reader and writers successfully make meaning, then the encounter can be considered as an achievement of actually knowing social-life as reality. This establishes a particular social order as complete and compatible with how reality is out there. The reality effect successfully established by readers and writers lies within and beyond any activity labelled as science (Lynch 1993). It is predicated on a number of interlocking capacities, which

include the recognition of words and sentences or symbols, the idea of linearity (ten Have 1999), and a recognisable telling order and telling event about what constitutes an appropriate knowledge (Morrison 1981). Considering the kind of literary notational system that is a journal article in the forestry milieu, YR87 has a telling order as depicted in Table 5.1.

Direction of text flow	Section of Young and Reichenbach (1987)	Page and (sentence numbers) in YR87
↓	Abstract	Not dealt with
	1. Introduction	381 (1-17) + 382 (1-28)
	2. Research objectives	382 (29-42)
	3. Methods	382 (43-51) + 383 (1-52) + 384 (1-30) + 385 (1-52) + 386 (1-8)
	4. Results and discussion	386 (9-35) + 387 (1-38) + 388 (1-33) + 389 (1-52) + 390 (1-19)
	5. Conclusion and recommendations	390 (20-39) + 391 (1-52) + 392 (1-8)

Table 5.1: Section ordering found in Young and Reichenbach (1987). Includes page numbers involved for each section + total number of sentence lines on a page.

The order depicted in Table 5.1 is an expected norm in the scientific literature and is part of how authority is established for the reality effect. Further, it is generally assumed that readers of YR87 would come from or be familiar with private forest landowner studies within the forestry milieu and hence would be sensitised to important debates within it. Finally, the text here is read (and re-described) as it would generally be approached if one had the intention of reading it in its entirety, in other words, systematically proceeding from start to finish (although due to space and time considerations this account is necessarily restricted to discussing only a small portion of the total text).

As a telling event, YR87 is a claim event (Morrison 1981). That is, the readers are asked to establish for themselves that a claim is valid, as based on the textual reality effect evoked by the authors. The claim event is evoked by the artefact itself and in this case through a certain style of presentation exemplified by an objectified language in which the

authors disappear and also through the presentation of a particular production order which includes authority establishment, measurement, replication pattern, observation, explanation-proof and result-conclusion. These are all intensely local productions between the artefact and the reader (after Law and Williams 1982; Lynch 1993).

Young and Reichenbach (1987) – 1. Introduction

YR87 opens with the sentence:

> [a]n estimated 74% of the economic opportunities for increasing timber production in the United States are on nonindustrial private forests (NIPFs)… (p. 381).

This is the first in a series of statements over the next 16 lines that chart an *opportunity* for increasing timber production from forests under private landowner control. The sentence leaves the immediate impression that most of the opportunities for increasing timber production are on private landholdings. There is no way of determining just how the figure of 74% was arrived at, nor how a complex socio-material realm was compressed so neatly into a numerical count (without looking up a reference in the text from which the percentage is drawn). What is given by the author's though, in order to make the figure intelligible, is a rendition of three reasons for the "economic opportunities" through a common-sensical sentence: "[t]here are several reasons for this" (YR87: 381). This is an early pivotal sentence which attracts the readers' attention to what underlies the opportunities and which calls-up the readers' interest in what is to follow. The opportunity and interest come together to form a persuasive initial understanding that should lead to a tacit agreement of the reader to the set hypotheses. The three points made are that:

1) NIPFs own 58% of USA forest land;
2) public forests are at maximum production capacity; and,
3) private (company) industrial forests are at maximum production capacity.

Opportunity is again emphasised and tightened in the first point as it is stated that NIPF landowners are often on productive lands and near

major markets. Inferred in the next two points is one or another of crises or incapacity (in meeting production requirements), unreasonable demand (from society in driving too many commitments onto public forests) or doing their part (against those that are not, *i.e*., NIPF landowners).

Opportunity is juxtaposed with and further supported by a statement suggesting a sense of crises or failure when YR87 go on to say that although "cost-sharing" practices and "technical assistance programs" had been run which had "encouraged" timber production from NIPF landowners, they had achieved only "limited success". Further, it was generally only those owners who have large holdings or are timber producers who had "accepted" such practices and programs. These are important points, as they start to construct landowners in a two-tiered fashion with, on one hand, landowners who manage their forests for timber production *against*, on the other hand, those who don't and who are implicitly deviant[5].

The next paragraph of the YR87 case opens with a review of the literature that reflects on the link between timber production and landowner characteristics, notably which characteristics are associated with timber production and which are associated with *not* producing timber. As the literature quoted in the text is all from within the forestry milieu, dating from 1972 to 1983, there is a commonality of general purpose established in this process with the reader. Further, the literature quoted (10 cases) covers nine states within the USA and the USA as a whole (1 case), which gives an implicit signal to the reader that there are general, time independent conditions that allow standard behaviours to be known across an entire society at a significant spatial level.

To summarise, three important transitions are made in the introduction of YR87 whereby the factual arguments are presented that establish a successful claim event crossing the entire text. The transitions are:

[5] Deviant here is used less as a pejorative term than as turning or being aside from the norm.

1. The artefact of the journal article confirms to particular requirements necessary to attain a status as authoritive (represented) knowledge within the forestry milieu in its objectified organisational form.
2. Landowners can be understood through generalisable, reproducible, time-independent, context-free knowing. This also forms an implicit social order (which is reinforced throughout the rest of the text).
3. There is an opportunity (to increase timber harvesting) and the research is an interesting response to that opportunity especially as it helps establish a persuasive case for the deviancy of a sub-population of landowners which the research offers to remedy through the model (of the theory of reasoned action).

Overall, landowners' socio-material contexts are purified through the authority established by YR87 who present a totalising picture of landowners with strict boundaries to what can be known and for which the research is eminently suited to fill-out.

Young and Reichenbach (1987) – 2. The research objectives

The next sub-section of YR87 (p. 382, lines 30-42) is short but vital. It looks back to the elements that go to make up the deviant landowners and forward to a broadly suggested outcome of the research. It is also an example of the second kind of normative commitment. In the sub-section, YR87 undertook to:

1. determine the intentions of NIPF owners with regard to the production of timber or other wood products in the next 10 years,
2. identify the underlying factors which influence the owner's intention to produce timber or other wood products in the next 10 years, and
3. suggest ways to change forest landowners' intended behaviour (p. 382).

These three steps link the concerns so far outlined in the text and capture the future textual reality effect by suggesting that ways to alter landowners behaviour will be given (this seems like a banal point, but as will become evident it is an important one). There is an expected form to such statements marked by the idea of research objectives to

which these largely conform. They also operate to define what will be broadly drawn out in the specific data collected. In other words, a social order has been defined in a way that leaves no loose ends, and the manner of its dismemberment (reduction) has been depicted with no conceptual space for failure or re-consideration (*i.e*., ways *will* be shown in which landowners *can* be changed). This step was possible because the text was not written up until after the research was completed. Here, YR87 research objectives will be re-described along the lines of stating 'how do landowners get to be defined (*i.e*., known) as *non*-timber harvesters, a class deviant from the norm (of timber-harvesters)[6]?

In the text, the research objectives are clearly offered *before* the methods are outlined. In practice though, they were (arguably) in a broad form before the theory and method were sourced and then tensioned with the (selection and eventual requirements of the) theory and method. In this though, they were likely not fully determined until *after* the research practice was actually concluded. The simple way of saying this is that the text is linear in its presentation of a social order as developed in practice, yet this was not the case in actual practice which is generally messy and contradictory (no matter how many rules are applied from the research strategy to contain that messiness). This tension cuts to the core of how actual practice is re-formed into a textual reality effect within this particular type of research. The reader may amongst a number of options:

- suspend or remain unaware of this knowledge of a tension;
- put trust in the type of research strategy/methodology (authority stems from the research type and the research practitioners written replication of their following of the types rule set); and/or,
- accept (likely implicitly) the research authors and/or communities context and legitimacy.

[6] One way to juxtapose this re-description with YR87 objectives, especially if familiarity with the forestry milieu is held by the reader of this thesis, is to reverse the main question and consider how unusual it would be to read a research question from within the milieu that went something like this: 'what are landowners intentions towards timber harvesting and how might their behaviour be changed in favour of *not* undertaking timber harvesting or the producing of forest products'?

When one or more of the above occurs for a reader, the reader is then in a position to accept the social reality deployed by the researchers.

This suspension of a tension or inculcation into the context by the reader is partly derived from the conventions of language itself (*i.e.*, the text is identifiable as an English text and then as having a specific code which governs the transmission of meaning); and, further, the way conventions amongst the community of peers operate and are understood by the reader; the recognition by the reader of the authenticity of the use of language by a particular author and so on. In generalising this statement to readers within the forestry milieu, I base it on my own experience mixed with insights from a broad literature on how readers and writers understand (or not) text (see for instance: Franklin 1984; Schuster 1986; Broderick 1994; Porter 1995; Vaughan 1999; Crawford, Kelly and Brown 2000; Kelly, Chen and Prothero 2000; Marietta and Perlman 2000; Burman 2003). I'd certainly recognise that this issue of how the reader understands the text remains somewhat indistinct as described in this chapter, but it should also be noted that this thesis has been demarcated in such a way as to avoid undertaking an empirical study or research into readers of text generated from within the forestry milieu. Such tasks rather remain (in league with the aforementioned broad literature on readers and writers) as important issues for further research.

Finalising the argument, in such a manner, the social order of the textual reality effect pre-exists its telling (writing) and is entirely reflexive in the text (Lynch 1993). There is, again, nothing unusual about this, but the two points to draw out are that it is: (1) a vital step in obtaining epistemic authority; and, (2) that it occurs in a variety of differing ways. The way it has been achieved in YR87 is via remnant-positivism, which is highly intolerant of contextual ambiguity in the socio-material.

Young and Reichenbach (1987) – 3. Methods

This is quite a sizable section in the YR87 text, covering pp. 382-386. It is split into two. The first part focuses on explaining the theory of

reasoned action, a propositional model[7]. It is an established epistemic frame with embedded normative commitments that, in a manner not necessarily evident in the explicit theoretical elements, fixes what reality is. The second part describes the practice of the research, which starts to articulate the theory of reasoned action with the NIPF problem, the other normative commitment. Echoing the structure of the YR87 text, the theory of reasoned action will be dealt with first in this account, and the research design which constituted the research practice will be dealt with second. It is not possible in the space available to work through YR87 methods section fully, rather selected elements are described.

Young and Reichenbach (1987) describe the theory of reasoned action

In YR87's textual representation of the theory of reasoned action it is reasonable to assume that readers, though commonly versed in statistics, extensive research designs and so forth, would not necessarily be versed in the theory deployed. YR87 describe it by summarising the originating authors' works and drawing from others who have used the theory. In essence, the account they put forward must be convincing in its depiction of a certain social order, otherwise the sought for reality effect might fail at this point. That is, YR87 stands or falls as a successful knowledge account *before* the results are represented and largely irrespective of what the results depict. Further, the account can be read as a guide to measurement (of landowners' intentions/behaviour), it is also a case of more directly discussing how the theory of reasoned action fixes what is (*e.g.*, reality) as a textual reality effect.

The opening paragraph of the YR87 methods sub-section details the theory of reasoned action's primary use: "…to predict, understand, and modify behaviour under volitional control…" (YR87: 382). For those readers who tacitly or explicitly recognise it, this statement relates to the primary cognitive aim of the theory which could be thought of as

[7] Ajzen and Fishbein's (1980) theory of reasoned action, later extended as the *theory of planned behaviour* (Ajzen 1988; Ajzen 1991), has been a popular and well used (verified) theoretical set which can be employed to predict behaviour (Cheung, Chan and Wong 1999). Note; with critical realism true prediction is not possible (Bhaskar 1989).

providing an "explanation via subsumption under universal laws" (Anderson 1986: 160)[8]. Certainly, this author associated it with a nomological understanding.

What is of real interest is that it is part of a set of meta-theoretical commitments informing the theory of reasoned action[9]. Anderson (1986) details this relationship (although using the concept research program, while this thesis uses the concept meta-theoretical[10]):

> …[W]hat counts as facts within a program are under different degrees of empirical constraint. The 'output' of a program – its empirical beliefs, theories, propositions, and hypotheses – must be justified by whatever methodologies are sanctioned within the research program. Metaphysical beliefs, however, are under a far weaker empirical constraint. As such, a program's concept of mind and human nature constitutes the taken-for-granted bedrock on which its knowledge claims are based (Anderson 1986: 167).

Anderson's (1986) quote makes it evident that "[m]etaphysical beliefs…are taken-for-granted…" commitments that come with a theory such as that of reasoned action. That is, for this thesis, they are normative and *unavoidable* components in an epistemic frame. They include what is, how what is gets known, what mind is, what humans are, *etc*[11]. Different research programs are constituted by different mixes of meta-theoretical commitments. There is enormous potential variability in this. Such meta-theoretical commitments are assumed but rarely discussed in empirical research such as YR87. Generally, they are the background from which reasoning is then built.

Presented soon after is the first equation of the theory of reasoned action in YR87 (depicted in Equation 5.1 on p. 137), which captures very precisely the mathematical relationship involved in determining the behavioural intention (using attitude and subjective norm).

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8 The full table that this comes from and the other quotes from Anderson (1987) that are in this chapter can be found in Appendix 11.

9 Meta-theory was defined in Chapter 1, p. 12, n: 11.

10 What is called here meta-theory, Anderson calls an 'encapsulated (positivistic) research program'. Anderson (1986) states: "…these macrostructures are best thought of as empirical, metaphysical, ontological, methodological, axiological, and ideological commitments made by individuals who choose to study social and natural phenomena from a particular perspective" (p. 159). This holds in comparison to the definition of meta-theory at p. 12, n: 11 of this thesis.

11 These issues, of mind, existence, *etc*., are inherently philosophical questions that are not resolvable through empirical assessment. In other words, they are beliefs.

$$BI=A_D(w_1)+SN_D(w_2)$$

Equation 5.1: Main equation of the theory of reasoned action, from Ajzen and Fishbein (1980)

Where BI = measure of behavioural intention

A_D = direct measure of attitudinal component

SN_D = direct measure of subjective norm

w_1, w_2 = beta weights (standardised regression coefficients)

There follows an explanation of the equation and which need not be elaborated here, but two more statements emerge about how the world is. Firstly:

> …two people with identical attitudes and subjective norms may have different intentions due to the relative weight they place on each component. Intention may be mathematically related to the direct measures of attitude and subjective norm by multiple regression…[whose]…coefficient, *R*, indicates how well the attitude…and the subjective norm…predict intention (YR87: 383).

This is a statement of research method and of the appraisal criteria necessary to secure the method. Underlying it is an emphasis on the "production of predicted effects in experimentation [and] correlation in *ex post facto* studies at the micro level…" (Anderson 1986: 160). It also gives a clue to the concept of human nature, notably as being focused on:

> cognitive man: a rational information processor who forms beliefs, attitudes, and intentions that are causally determinant of his behaviour (Anderson 1987: 160).

None of these conditions are explicit; rather to use the theory of reasoned action correctly requires the user (researcher) to reflect these commitments in their practice of the theory. There are implicit instructions that come with the theory. For instance, the meta-theoretical commitment informing a concept of mind emerges in the next paragraph of YR87, through the statement:

> [t]he attitude toward the behaviour should be measured using a method that locates respondents on a bipolar evaluative scale. Favourable attributes toward the behaviour generally lead to the performance of that behaviour (p. 383).

This suggests that mind is "accessible to others via survey research [in which] actors have privileged access to their cognitive states" (Anderson 1986: 160). The YR87 quote above refers readers and future practitioners to a sub-set of methods that need to be practised in securing this component of the theory (*e.g*., a bipolar evaluative scale). It is in the particulars of the practice though that the purported connectivity to the meta-theoretical commitments occurs, although again in a manner that is not explicit. So, if a researcher follows the correct rule-based practice, and reports in the correct format, then what is produced (*e.g*., a measure) is *of that* meta-theoretical commitment – even though that commitment may never have been directly discussed or written out. Whole sets of these practices go together to make a piece of research.

In using the theory of reasoned action, YR87 import these and other meta-theoretical commitments, that are inherent to the theory's constitution as an epistemic frame, into their research. Further, YR87 arguably chose the theory of reasoned action because they were partly aware of its meta-theoretical commitments, at least as articulated through words like prediction, its objectified language and in seeing its apparently successful use by some social psychologists and allied researchers. In operationalising the theory YR87 fuse their research objectives with the theory of reasoned action, so mingling two broad sets of normative commitments.

Young and Reichenbach (1987) describe their practice

The second part of YR87 methods explains their practice, which includes sampling, the questionnaire and analysis. The process unfolding here sees yet another restriction in the social order. It is a restriction that is practised in concert between researchers and landowners through a practice that the researchers frame (as presented on p. 385: lines 17-22/23-45). It provides a transitory stage between theory (of landowners) and practice (of the survey) where, for a very brief textual moment, the irreducible complexity of the world can be inferred as it comes into absolute contact with the largely fixed, reduced and entirely knowable reality effect so far established in the text. Note this is prior to

the survey (of 1748 potential respondents, which leads to 621 viable respondents) from which the results are described. The step is a normal part of the theory of reasoned action involving the determination of what beliefs (about producing timber) and referents (of important others in the life of the landowner) are salient (*e.g.*, what aspects of these come forward as relevant)[12]. Once a small number of beliefs and referents are established, they can be incorporated into the survey proper as the (only) categories that landowners will essentially be able to respond to. The sub-sample step serves as a vital step in containing the complexity of landowners lives and in managing (reducing and clarifying) the data that will be generated in the primary survey. By its very nature, the author's of YR87 in this final step effect a great deal of control over what a landowner can ever be.

In describing the sub-sample practice, the text establishes an enduring link between the research objectives (a separate normative commitment) and the theory of reasoned action for the first time. Initially, the link is not well defined, but the sentence that does this work is:

> …the behaviour to be studied was defined as: use (action) of private non-industrial forestland (context) to produce timber or other wood products (target) over the next ten years (time) (YR87: 385 – lines 19-22).

This quote depicts elements of the theory of reasoned action and the research objectives. In the next paragraph, the consequences of acting on this definitional (quoted) process are reported on as a practice of communication (by telephone interview) between landowner and researcher. Befitting a remnant-positivist approach, the researchers are in primary control of what will eventually get considered as part of the measure from which results (on landowners) can be drawn, although it is also an intensely local experience (between interviewer and interviewee in this case) (see Maynard and Schaeffer 2000).

The first issue of note in the paragraph is an indicator of what has to happen, simply signalled in the statement that:

[12] Unusually in YR87 text a description of the sub-sampling step (lines 17+), which occurs in practice (out in the world) *before* the main sample, is given *after* the description of the full sampling step (lines 9-16). In other words, the text does not follow the order in which the survey was actually conducted. Why this is so is not evident and is confusing.

> …the attitudinal and normative beliefs and the referents must be elicited from a representative subsample of the population (YR87: 385).

It is then noted that 61 Illinois landowners (presumably from the sample generated for the main survey) were telephoned. Then the two sentences which are in effect the most pivotal of the entire research are presented:

> [t]o identify salient beliefs, these respondents were asked to list the advantages and disadvantages of producing timber crops from their land. To identify salient referents, the respondents were asked to name individuals or groups who would influence their decisions about managing woodlands for timber (YR87: 385).

Unequivocally, theory (with underlying normative commitments), research objectives (as a direct normative commitment) and practice have been linked and made real in this textual moment. One further and effectively final step in knowing landowners now occurs in the statement that:

> [f]or this study, these modal salient beliefs and referents were defined as those mentioned by at least 40% of the respondents (YR87: 385).

This has the effect of reducing substantially the already controlled listings of responses from landowners (of their complex and rich lived realities) to a manageable pool of beliefs and referents. In this case, 22 generated beliefs are reduced to 8[13], and 7 referents are reduced to 5[14].

Young and Reichenbach (1987) - 4. Results

Although the results are not directly applicable here, it is useful to briefly view an aspect of the results to see how the entire process discussed to this point congeals as an outcome. In Table 5.2 (on p. 141), the 8 generated beliefs discussed above are shown in relation to a set of results reproduced from YR87.

[13] This is listed as 9 in YR87 text, but only 8 are actually listed in their results table (see the left-most column in Table 5.2 on p. 141).

[14] The five referents are (1) family; (2) friends; (3) neighbours; (4) Department of Conservation; and, (5) private conservation groups (YR87: 390).

Beliefs (Perceived outcome of producing timber)	Mean belief strength (*B*)		Mean evaluation of belief outcome (*E*)	
	Nonintenders	Intenders	Nonintenders	Intenders
Affecting enjoyment of natural scenery	6.9	7.2	−1.0	−0.2
Providing for personal firewood and timber needs	5.4	8.2	0.3	2.6
Increasing the amount of wildlife	5.6	6.8	1.6	1.9
Disrupting nature	6.2	5.4	−2.6	−2.0
Damaging the forest	5.1	5.2	−2.8	−2.0
Reducing recreational opportunities	4.7	4.2	−2.2	−1.4
Interfering with other land uses	3.7	3.8	−2.3	−1.7
Providing supplementary income	2.4	4.7	−1.2	1.0

Table 5.2: On the road to resolving the deviant landowner. Reproduced from YR87 – "Table 2. Belief and evaluations of belief scores for those who intended and did not intend to use their NIPF to produce timber or other wood products" (p. 388).

Although Table 5.2 has been substantially de-contextualised from its presentation in YR87, the important effect is in observing the objective reality of belief (left column) and the symbolised numerical aggregate of the 621 respondents (four other columns). The table calls up and reflects back upon (in the reader) an underlying and historically stabilised confidence in the capacity of expected numerical regularities of abstracted classifications (as established via psychometric tools) regarding a casual, lawful reality. In this, the locus of knowledge is not the landowners' lived reality, but the statistical relationships of (researcher) abstracted and strongly artificial (that is de-contextualised) aggregates. As such a system rests upon a law-like reality, prediction is normalised (after Danziger 1990; Little 1991). This enables YR87 to report on the capacity of the research to be predictive, which is italicised (by this author):

> [n]onintenders had a stronger association between timber production and disrupting nature. Since providing a supplementary income was evaluated as being negative by noinintenders and providing for personal wood needs was nearly neutral, strengthening these two beliefs would have little positive affect on attitudes. However, since increasing the amount of wildlife was evaluated as a positive outcome [for nonintenders], *positive attitude change could be expected from efforts to strengthen* the association between the outcome and timber production (pp. 388-389 – italics are mine).

This excerpt, and others towards the end of YR87, are the cumulation of meaning-making and socio-culturally mediated process that established the social order early in the text. It sets boundaries (effectively) to what the results later in the text can dictate. For the forestry milieu reader though, this social order is likely to have disappeared behind the results (via the textual reality effect). In this, the results appear to be the unique and pivotal expression of the worth of the research rather than the textual reality.

Young and Reichenbach (1987) - 5. Conclusion

This is discussed later, under ideology.

Young and Reichenbach (1987) as epistemic

This examination of YR87 has shown that there are a set of normative commitments that come with(in) the epistemic (*e.g*., what is mind), and that there is another normative commitment applied across the entire research and which comes to mesh with the epistemic as the text is unfolded (*i.e*., the NIPF problem). Considering though, the way such a text is accomplished in relation to a reader, these components are *only* likely to be explicitly evident to a reader who is either from beyond the private landowner research community or where a text violates/disrupts some set of norms about how private landowner research is actually conducted. In other words, *ceteris paribus*, text and reader are likely to come together in an agreed moment where fusion leads to the reading space being considered as epistemic, no matter the normative elements.

The overall moment of the textual reality effect, as impacting on a reader, is to infer a real world that has overt and implied conditions of a specific type and in which there is a (generally) subtle transitioning together of an authors normative commitments of how the world should be (*i.e.*, the NIPF problem) and how it is. If the account of the theory of reasoned action as undertaken through lived-work becomes recognisable as a practical accomplishment, then the social order it depicts is real (or, in the words being deployed here – is a successful textual reality effect for that reader, at that time, in that context).

Looking at YR87 as a whole, the text has landowners depicted in such a way that they are, for all intents and purposes, pre-knowledged. This is a standard step, but the important observation is that this occurs with a high degree of precision, thereby treating the system under investigation as entirely knowable. Further, the authority for research is established, emerging from real problems (for the forestry milieu in securing timber from private landowners) and from beyond the journal article itself. A second external authority derives from identifying two types of landowners, those who are comfortable allowing timber harvesting on their lands and those who are not and who are deviant. This is all presented in the text as objective arguments of an essentially factual nature secured through statistical reasoning. All of these measures leave the reader with the impression of the successful use of the theory as representative of the (real) world. Trust in numbers is required, as they are so de-contextualised it is not possible to either follow the trail (in the text) as a localised practice nor appreciate how they were developed. The results can only depict differing patterns within that knowledgeable whole[15]. What is of significant import here, in terms of epistemic-normative interlinks and of landowners as a knowledge problem, is that all that can be known via the textual reality effect is locked

[15] What trust in numbers essentially means is that: "…quantification is a technology of distance. The language of mathematics is highly structured and rule-bound. It exacts a severe discipline from its users, a discipline that is very nearly uniform over most of the globe…reliance on numbers and quantitative manipulation minimizes the need for intimate knowledge and personal trust. Quantification is well suited for communication that goes beyond the boundaries of locality and community. A highly disciplined discourse helps to produce knowledge independent of the particular people who make it" (Porter 1995: ix).

into place before the main survey has been run (and described). In essence, no matter what happens in practice, YR87 can *not* go outside this frame, nor considering the way in which landowners have come to be known, suggest anything outside. This is, again, an outcome of the type of research conducted. Figure 5.1 (on p. 125) synthesises all of the above on YR87 and shows each of the transitions, systematic reductions and specifications of social order that secure landowners as completely known before the results are presented and through which knowledge is generated.

What is being drawn out here is that YR87's success in establishing a textual reality effect is a particular kind of reflexive meaning-making that both depicts a social order, obtains the readers agreement to it (at least by being well written within accepted researcher community norms), proves its existence (with evidence), and then shows how it can be changed (by altering factual things within the social order). The overall scientific knowledge product remains an epistemic product, no matter the normative elements. As will be explained to come, this can all be described through the idea of a scientific worldview. There are a number of these scientific worldviews (using the word scientific very broadly), which encourage differing contextualisations of the world and which incorporate differing sets of normative commitments (in metatheory notably). Some of these contextualisations are powerfully reductive of the complexity of the socio-material world, thereby providing (relatively) un-equivocal and benignly tensioned guidance for action (praxis). Other contextualisations are, in differing ways and extents, holistic or more sympathetic to breaches in (textual and reader aligned) depictions of social order. They can also draw how classification is conducted explicitly into the formal presentation of social-material order (not something YR87 does to any degree).

In the next sub-section, YR87 will be discussed in terms of ideology and then it will be shown how it sits within a scientific rationality (worldview) that makes the NIPF problem and hence the epistemic of which the problem has become a part, an unfavourable ideology.

The ideological and an irrational rationality

Young and Reichenbach (1987) as an ideology

The NIPF problem was described in chapter 4 as an (unfavourable) ideology, although in this chapter it has so far been described as a normative commitment. A five point definition of how to determine when some aspect of knowledge could be considered to have become ideological was provided in Chapter 4 (pp. 104-105). In that definition, it was stated that when an epistemic framing translates into some kind of power mechanism (outside of the community it came from), it becomes an ideology, even though it may still have the trappings of an epistemic framing. In this, and dependent on context, it can be:

- a favourable ideology;
- an unfavourable ideology; and,
- both simultaneously.

This sub-section discusses how YR87 can be re-contextualised in such a way as to depict it as ideological and then as an unfavourable ideology.

What YR87 provided was an example of how the NIPF problem meshed with a selected epistemic frame to become a scientific (epistemic) knowledge product. The epistemic frame though remained intact, thereby depicting a certain kind of truthful social order - a decontextualised social order substantially defined by the researchers. The conclusion to YR87 provides a useful example of how the prescriptions made within that conclusion can make YR87 ideological (in certain contexts)[16].

Quotes 1 and 2 reproduced in Table 5.3 (on p. 146) were charted early in this chapter. Quotes 3 and 4 are prescriptive and if acted upon by a reader make YR87 an ideological scientific (knowledge) product.

[16] This is a weak inference and this is as far as this work can go in terms of suggesting the assertion of YR87 as ideological. To strengthen such an argument would require, for instance, closer investigation of what actually happens to a text like YR87 when it is published and read by people in the course of their day to day activities. In relation to this argument, it is assumed that the case literature reviewed herein can and does influence policy makers, extension staff, *etc*., as they act in the world.

When considered in terms of meta-theory, quotes 3 and 4 represent an evocation of an underlying axiological commitment along the lines of "[i]deological/value commitments/policy implications", which are that:

> [i]ndividuals are free to seek and evaluate information that may lead to changes in their beliefs, attitudes, intentions and behaviour. Policies can be designed to affect both cognitive structure and behaviour through various forms of information dissemination (Anderson 1987: 161).

Together, this suggests that Young and Reichenbach meant the research to be directly applicable and usable by individuals/groups outside of the research community, and that it should affect people (landowners) in civil society[17]. Such a position fills, for this argument, the definitional basis established herein that the NIPF problem in epistemic guise is ideological – 'it (can have and is meant to have) significant effects on the world through a (some) mechanism of power' (Chapter 4, p. 105).

Quote no.	Type of textual meaning	Quote from the conclusion of YR87
1	NIPF problem outlined	"If the goal is to increase production from these lands, then the number of owners who intend to grow timber must be increased" (p. 390).
2	Direct epistemic framing	"The social/psychological model used in this study provides a framework for determining effective ways for changing intention and thus behaviour" (p. 390).
3	Potential translation into power mechanism/s	"To increase the number of owners who intend to produce timber, new programs would be designed to change the beliefs of the non-intenders" (p. 391).
4	Prescriptive practice suggested	"[for example]…decreasing the strength of association between producing timber and disrupting nature…[*etc*]…In practice, it is difficult to change a person's motivation to comply. Therefore, persuasive communication should focus on increasing the strength of the belief that their family and the Department of Conservation wants the forest owners to produce timber…" (pp. 391-392).

Table 5.3: Quotes from the conclusion to Young and Reichenbach (1987) showing major translations in a prescriptive process that can make Young and Reichenbach (1987) ideological under certain contexts

[17] Nominally, civil society is the sphere of society that exists alongside or between the family, corporations (private), and the nation-state (public). It is usually discussed as an organisational form, such as voluntary organisations, educational and cultural bodies, trade unions, *etc* (Bullock and Trombley 1999: 126). In this case, the meaning is stretched to cover individuals and organisations essentially outside of the state and capital.

The pathways between research and outcomes in the real world can be considered in terms of two models (depicted in Figure 5.2 on p. 148). 'Model A' is that which appears to be envisioned by the YR87 researchers and 'Model B' is this author's analysis of how YR87 might actually unfold or be unfolding.

YR87's (possible) understanding of how their science becomes action and outcome is depicted as Model A, on the left of the figure. It is a relatively linear translation that depicts the NIPF problem as an unproblematic assumption which helps set the rough boundaries for the theory of reasoned action. The completed research, a secured epistemic frame with prescriptions explaining how the truth in the results can be applied, is ready for a reader (*e.g.*, a policy maker or extension officer) to pick it up and turn it into some form of communication to landowners. The outcome will be to bring more landowner *forest* under management. Model B, on the right side of Figure 5.2, is more likely to be a reasonable argument to what is occurring. It depicts the coming together of the epistemic and normative in what gets perceived as an epistemic frame, its further articulation outside of the research community, and its entry into a complex realm of power relations that involve other knowledge systems (as ideologies). The bottom-most box gives the idea that the space is heavily iterative, contested and can feed back strongly on the research community in ways not necessarily obvious.

So in terms of the definition of knowledge as ideology used in this thesis, YR87 while discussed and considered within the private forest landowner research community, is an epistemic framing (with embedded normative commitments). When acted upon by some reader out in the world, YR87 is an ideological scientific (knowledge) product that implicitly carries the NIPF problem with it. How YR87 as an ideology can be seen as an unfavourable ideology requires the outcomes from Chapter 3 and 4 to be brought into this discussion and for YR87 to disappear into the idea of a research rationality.

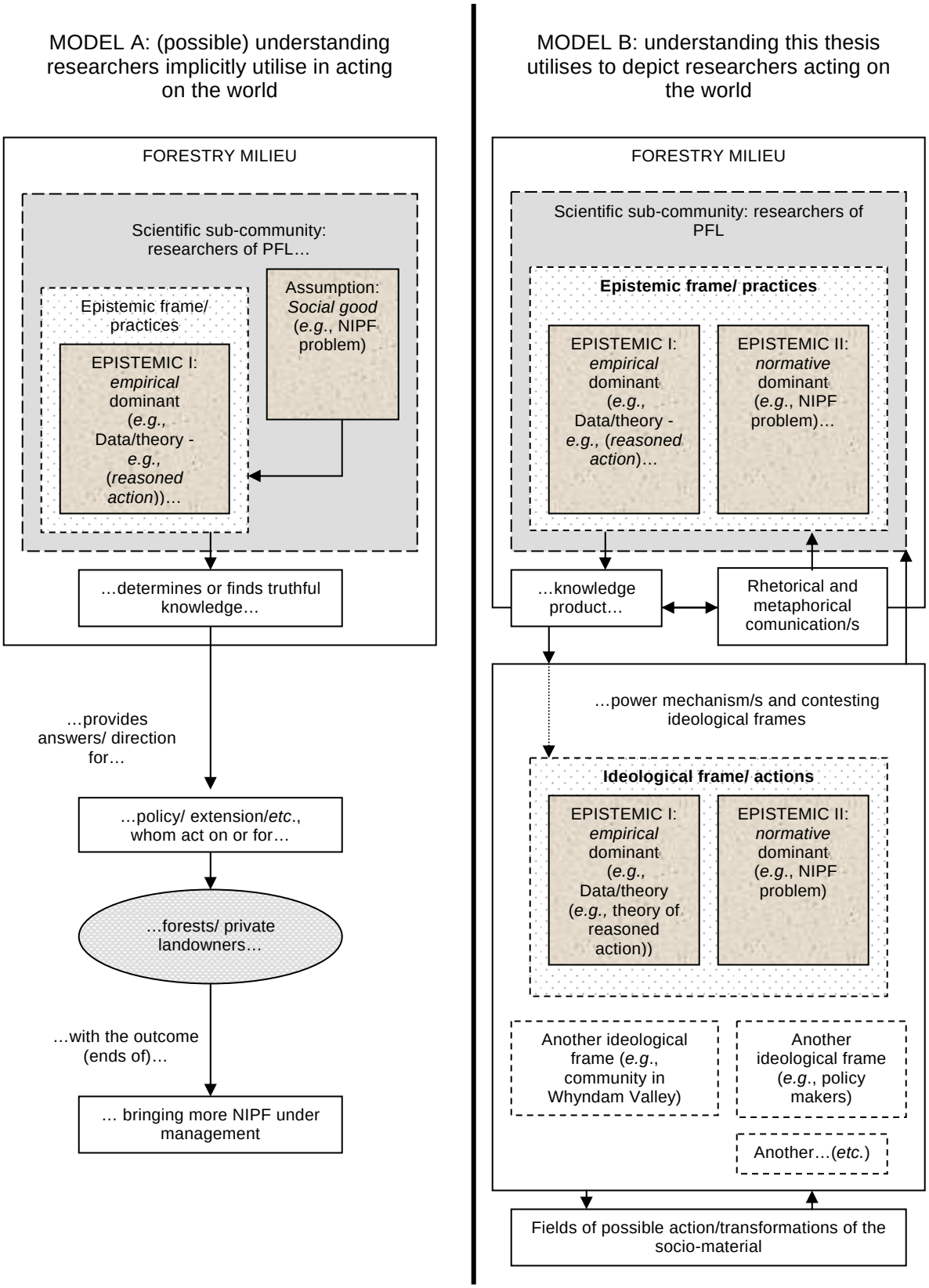

Figure 5.2: Models of pathway of research to outcome in the world. Model A: possible way envisioned by YR87. Model B: this authors understanding of how YR87 works.

An irrational rationality: A community which lacks epistemic and normative diversity

Chapter 3 explored 32 cases from the literature where at least 30 cases (if not all of them) have essentially the same approach to knowing landowners. This represents one epistemic framework (with a consistent set of underlying normative commitments). It was largely discussed through the epistemology of remnant-positivism (or the allied abstract empiricism). Chapter 4 suggested that a potential ideology associated with how forests ought to be utilised as a social good, called the NIPF problem, was also strongly evident across (many, but not all) cases. In the beginning of this chapter it was shown how the NIPF problem got into the epistemic, so powerfully structuring it – but also that the epistemic did not loose its status as (generated) knowledge in the process (assuming acceptance by the research community). This epistemic could be seen, in certain contexts, as being ideological. These various streams can now be brought together in establishing an unfavourable ideology.

There are two facets that depict YR87 as an unfavourable ideology and two equivalent contexts that make this so; one emerges internal in YR87, and one is applied by the general context of all the cases of which YR87 is a part. The first facet relates to the findings in Chapter 4 about what the NIPF problem legitimates regarding researcher behaviour towards landowners and nature. Notably, both landowners and nature are politically neutralised through being depicted as objects, from which researchers are epistemically divorced by their use of rational, detached and universal research perspectives. It was also suggested that a social order underlies the NIPF problem and maintains the problem by re-enforcing management as a necessary prescription that foresters carry in the world. The unfavourable status of this is that landowners are depicted as deviant from a norm of management activity and further do not share with researchers *relative* equality in the shaping of knowledge, as the researchers have significantly more

power to shape knowing than do the landowners. The NIPF problem, as carried into the world, is thus unfavourable to landowners[18].

The second facet relates to YR87 as an exemplar of an epistemic frame amongst 30 (of the 32) cases. As established in Chapter 3, there is great commonality amongst most of the cases in their epistemic commitments. The NIPF problem is also evident to varying extents across the cases though as briefly discussed in Chapter 4 the NIPF problem was *not* evident in all the cases[19]. It is this context (of epistemic frame) that establishes this second facet as unfavourable, notably in the form of a research rationality.

Taken together, the single epistemic frame with the attendant NIPF problem present as a single research rationality dominant in a large number of cases. This question of an irrationality has been touched upon on a number of occasions. A rationality can be considered as a system of good reasoning. An irrationality is utilised in its everyday usage, *e.g.*, that is as *not* good reasoning. Irrationality emerged in the context of the discussion in Chapter 1 on theorising science. Here, it is concluded that there is a single research rationality, which manifests a lack of diversity in theory choice/application, with little critical dialogue evident in the community that utilises it. This is potentially restrictive of researcher actions in a complex cultural and socio-material world. As landowners reflect this complexity and there are a number of scientific worldviews which could be utilised to conduct investigations into it, the restriction to one worldview, and within that to the particularly poor epistemology of abstract empiricism, leads to the conclusion that the

[18] As a final caveat, it needs to be noted that it is not unsurprising that the NIPF problem is the dominant normative commitment evident, as management is the most common concept across the cases. This is in part an outcome of the initial boundary setting accomplished in this thesis. It is reasonable to argue that the topic 'objectives and goals' would likely have a reasonable number of management focused texts. This though, does not undermine the critique launched at the commitment, instead just serving to warn that the extent of dominance of management can (at least partly) be an outcome of my selection of cases for review.

[19] For those cases where the NIPF problem is not obvious or non-existent, it is possible to suggest that whatever the normative commitment/s inhabiting the research epistemics, the scientific worldview/perspective is similar and suggestive of at least allied normative commitments in the research: though this would be a rather large task to undertake as an assessment. Also, although amongst those cases with an identifiable aspect of the NIPF problem and which there is similarity regarding how it gets into the epistemic as a phenomenological event, the actual context of each piece of research does vary (with YR87 being one of the more troubling cases ethically).

rationality is irrational. It is irrational to landowners *and* researchers, because it legitimates ethically troublesome prescriptions for landowners' lives. It also fails to attend to the potential diversity in their lived realities, so down-grading whatever good forestry science might actually be able to bring.

Expanding on Table 3.13 (on p. 97), the dominant scientific world-view in the case literature is depicted with two other potential world-views in Table 5.4. Firstly, dualist/materialist contains the epistemology of remnant-positivism and abstract empiricism. As focusing on epistemology and axiology, the other two worldviews give a sense of the differences that might occur in depicting context and lived-reality that would emerge in (research) approaches sensitive or engaging with them.

	Mainly about matter; Mechanistic	**Mainly about mind and spirit**	**Mind-matter integration**
	Dualist/Materialist	Social constructionist	Participatory
Epistemology	Objectivist/realist: Findings 'true; meaning repeatable, verifiable, quantifiable. Knowledge accumulates over time, approaching 'Truth'.	Knowledge is transactional, subjectivist, politically determined. Deconstruction of grand narratives.	Knowing through active participation. We know our world as we act within it with critical subjectivity. Extended epistemology.
Axiology	Propositional knowledge about the world is an end in itself, intrinsically valuable. Knowledge is value free.	Propositional, transactional knowledge is instrumentally valuable as a means to social emancipation.	Practical knowing how to foster human and ecological flourishing is the primary value, supported by propositional, experiential and other forms of knowing.

Table 5.4: "A representation of competing worldviews" (reproduced from Reason 2001 - the full table is can be found in Appendix 12)

Taking on research designs internal to one of these worldviews (or just attending to more complex designs within the mainly about matter worldview) would alter depictions of social order and change contextual understandings, alongside shifting prescriptions or action in the world, potentially building more diverse options for the future.

It is worth noting, as a final point before the conclusion, that there are a small number of researchers who struggle fitfully against the power of the dominant rationality, for struggle they do: critiquing, pointing to other ways of doing, acting to reveal other voices silenced in the long sweep of research practice, but never truly escaping the rationality (that is, Bliss and Martin 1989; Bliss 1992; Bourke and Luloff 1994; Egan and Jones 1993; Egan, *et al*., 1995). This is a good sign as the potential exists for breaking away from the dominant rationality.

Recovering a failing science

Securing the thesis assertion

The assertion advanced in this thesis is that researchers in the forestry milieu who study private forest landowners are largely committed to a single research rationality that has particular epistemic and normative characteristics which severely restrict the way that landowners (and their inter-relationship with forests) can be known. This assertion has been supported by investigating 32 cases from the literature on private forest landowners using insights from science studies and most notably epistemology. One of the cases was further investigated using additional insights from ethnomethodology. It was found that there was, effectively, a single epistemic frame common across the 32 cases, that there existed a dominant ideology called the NIPF problem, and that this problem was representative of a social good that implicitly structured the social order that emerged from the epistemic framings. This was considered as an (instrumental) rationality that, it was suggested, made the NIPF problem an unfavourable ideology.

What was found in particular is detailed to follow. The description follows the order of presentation in this thesis and moves from least to more complex.

It was found that most of the cases fail to adequately express or adequately define *what* concepts were being used. There were two dominant conceptual approaches: (1) management as a single concept

and, (2) goals, objectives and intentionality as a group of similar concepts.

Most of the cases used little or no (analytical) theory and were descriptive in approach. Those cases that used (analytical) theory tended to be of a broadly theory-testing approach. A few cases used (analytical) theory in a robust manner, but only one used any reasonable theoretical understanding of human-nature inter-relations while three cases used theoretical understandings of human behaviour/self.

All but a handful of the cases were examples of extensive research. Surveying, of one form or another, was the most widely utilised research strategy with mail surveys as the most widely utilised data collection practice. A reasonable number of cases failed to adequately describe their research designs. Data analysis was primarily statistical in form and amongst the statistical techniques used, most were ranking, less so associational and only a few typological.

There is a reasonable sense that epistemological-practice interlinks, especially relating to utility, mechanism and boundedness, are not well attended to across at least some of the literature, if not a majority of it. All bar three of the cases were synchronic in temporal scope. Most of the cases were objectivist, deterministic, dualistic, linear, (remnant-) positivist and foundational in form. Conversely, few of the studies were constructionist, narrative based, attempted fusion, circular, interpretivist or anti-foundational.

Some of the cases (effectively) claim value neutrality, yet come to normative positions at odds with a claim for a fact/value distinction in science[20]. Amongst 30 of the cases (dropping from 32, by excluding the two potentially ontologically distinct cases of Bliss and Martin 1989; Bliss 1992), only one case stands out across the board: Karppinen's (1998), *Values and objectives of non-industrial private forest owners in Finland*.

There is a normative epistemic frame called the NIPF problem evident across many of the cases (involving a focus on timber production

[20] Note that this author in this thesis does not adhere to such a division between fact/value.

and/or management activity in forests). Researchers across the case literature appear to see themselves as having some capacity to affect the world (*e.g.*, influence mechanisms of power) which potentially makes the NIPF problem an ideology.

The NIPF problem is underwritten by a social good - to supply timber to capital and to regulate/control human interaction with forests through a rational scientific worldview, so as to develop (rural) communities. The social good in the forestry milieu is stable across time, as it incorporates a coherent, evidentially supported, meaningful and honestly propagated account for action amongst those in the milieu. The social good underlying the NIPF problem rationalises action in the world through the concept and practice of management, regardless of the type of management (*e.g.*, timber, multi-purpose, sustainable). However, management is ill-defined in most of the literature (though not all) and is usually employed stripped of rich context. It also carries an unexamined calculable reasoning that further legitimates problematic approaches in the understanding of landowners and forests. The social good manifested through the NIPF problem influences the choice of research theory (epistemic) towards those that are meta-theoretically committed to depicting a material reality, constituted by universal and law-like relationships that allow for the prediction of human behaviour through the self reporting of those being measured. Considered as a set of normative commitments or as an ideology, it enters the epistemic frame and so comes to be expressed through that frame as an epistemic (scientific knowledge product). This process is encapsulated by the idea of epistemic-normative interlinks which are presented as textual reality effects that come to fix social order in a particular way.

Researchers as subjects construct landowners and nature as objects. This is done via a rational, detached, universal perspective. The perspective allows place and context to be transcended. In this, to a considerable extent, it politically neutralises both landowners and forests by maintaining an epistemic framing well divorced from the influence of either. Forests (nature) particularly, are seen by researchers as passive and awaiting transformation (*i.e.*, trees/forests/nature have no

real agency). Landowners, on the other hand, are strongly pre-knowledged as entirely knowable through an objectified language that depicts a generalisable, context-less, quantitative, reducible and value (ethics) free social order that is open to prescriptive intervention. The NIPF problem with the single epistemic frame across most if not all of the 32 cases can be considered together as part of a single scientific rationality (worldview) that defines what can and can not be known about landowners in the context of enacting prescriptions towards making landowners manage their forests. The constraints it places on knowing lock-out other scientific worldviews and make it difficult for other worldviews to be seen, even for some degree of latitude to be given to different ways of thinking. The lack of diversity in the private landowner research community could be said to inhibit critique and disrupt the necessary community procedures which can distinguish good research procedures in the community from bad ones. As the dominant research rationality operates to know landowners in one restricted manner only, it is reasonable to assume that prescriptions made to increase management activity and the understanding of forest science by landowners do not reflect the diversity in ways of being and so is irrational to both landowners, forests and researchers.

If it is not (social) science, then what is it?

As a final argumentative point before moving into a discussion of prescriptions for the future, it is worth briefly exploring the issue of good and bad research in regard to whether Private Forest Landowner (PFL) research is actually scientific, as the previous paragraph clearly suggests that it is not[21]. If it is not social science, then what is it? To do this, a brief recap of the 'Theorising Science' section of Chapter 1 will

[21] As already discussed, this thesis sits within an ontology (critical realism) that pulls natural and social science into a philosophical frame that coherently deals with both together. That said, when dealing with the PFL literature in regarding how researchers and readers might understand science, it needs to be assumed that PFL research resides within the broad remit of the social sciences and that the social sciences are able to be discussed as being scientific. This statement is an assumption which is based on a literature largely left out of this thesis, mainly as it is an enormous literature and is strongly contested. It is not prudent to enter this literature as an exercise in discourse and synthesis in a short work like this, so in this thesis science has been defined and not explored as a concept itself.

be undertaken and then the current findings will be reflected against that. Further, Gerring (2001) will be used to define what good social science is[22]. This will all lead to a description of PFL research as failing to provide real understanding and essentially being politics by other means, most notably in support of the forestry milieu[23].

Theorising science

If the argument of this thesis holds: that PFL research is evidenced by one dominant research rationality, an irrational rationality underlined by problematic or failed epistemological-practice interlinks and an unfavourable ideology in the NIPF problem, then as a generalisation most of the PFL research is *not* scientific and fails as social science. Clearly, it is treated as scientific by researchers from within the milieu and one suspects by many readers and that means I must now resolve this tension.

In Chapter 1, I used Duran (1998) and Longino (2002) to (very cautiously) state what science is. In part, science is:

- undertaken by men and women who form a social group (community);
- it is undertaken (in some moment of time) as a complex nexus of social, cognitive and material practices;
- the practice (itself a form of knowledge) produces knowledge;
- knowledge is a status defined by the social group (of men and women) under particular conditions which include:
    - having an embodied or artefactual form;
    - recognised as having logical, evidential and social interactions in its formulation and justification;
    - involving some kind of data evident to the social group;

[22] Note: Gerring's (2001) argument is underlined by a form of pragmatism and consequentialism (see the postscript in Gerring 2001).

[23] An issue this thesis has not explored are the results depicted in each of the 31 cases (excepting YR87), as such an analysis was not required to secure the assertion. Therefore the issue of failure in producing understanding is then an inference from the results given in Chapter 3 and 4 regarding the general failure to be scientific, the evidenced problems with methodologies across the cases and the restricted ways in which landowners and nature are contextualised.

- the data has to be arrived at through reasoning buttressed by critical scrutiny across the social group/community and in light of the communities goals;
- critical scrutiny involves having legitimate avenues of criticism, uptake of criticism, public standards and relative equality of intellectual authority.
- Its rationality is in part determined by:
  - having theorisations available which reflect diverse points of view;
  - choices are made via critical dialogue; and,
  - consensus is reached without coercion.

These issues were mostly engaged with in this thesis through the idea of the epistemic and of two normative states; one intimately involved in the epistemic and that tends to come with the epistemic and another separate to the epistemic but which becomes entwined with it as a scientific practice unfolds.

Where PFL research fails as a social science

This thesis has charted the formation and reporting on epistemic and both kinds of normative states across 32 case examples as part of an investigation into PFL research as social science. Taking this into account, the question can now be answered as to whether PFL research, broadly speaking, is scientific. This will be done through reflecting the outlined model of science in the previous sub-section against the outcomes put forward in the thesis to this point.

The form the primary answer takes will be presented initially as a set of sub-questions and answers.

- QUESTION: is there a definable social group/community?
  - ANSWER: yes, PFL researchers broadly constitute a definable sub-group or community in the forestry milieu, as viewed through the general practice of citing each other. Not all cases do though (see Chapter 1, pp. 17-18), so there is likely to be more than one community at work.

- QUESTION: what embodied or artefactual form does the knowledge take?
  - ANSWER: in this case textual.
- QUESTION: do PFL researchers appear to practice a science to produce knowledge?
  - ANSWER: yes, the literature conforms to a form and product that is recognisable as a type of scientific knowledge.
- QUESTION: is the knowledge recognised through logical, evidential and social processes in its formulation and justification?
  - ANSWER: yes, and most of Chapter 3 herein dealt with various components of such.
- QUESTION: what is the data recognised by the group?
  - ANSWER: notably that constructed around the variable (as a measure of landowners self-reporting).
- QUESTION: is there critical scrutiny of the logical, evidential and social processes utilised in its formulation and justification?
  - ANSWER: largely, no. There are evident problems with methodologies deployed, practices undertaken and the overt co-ordination of the understanding of social life via the NIPF problem (as detailed in Chapter 3 and 4).
- QUESTION: is there diversity in potential theorisations?
  - ANSWER: by and large, no. Again, Chapter 3 dealt with this lack of theoretical diversity and the further lack of critical reflection attendant to that.

So in summary, PFL research largely fails as a (social) science due to:

1) the fostering of an environment, stemming from a lack of critical scrutiny, in which methodological errors are normalised alongside the containment of research topics within the scope of the NIPF problem; and,
2) there being little evidence in the case literature of either diverse theorisations or the potential for such as tested through critical dialogue.

Much of the argument to this point deals with the epistemic and social group/community failure to foster diversity and critique. For the trickier question of good or bad research and/or science it is worth turning to Gerring (2001). We can enter Gerring's (2001) formulation via the question of discussing social science as being partly defined by its methodology.

PFL research as overtly politics by other means

To be as brief as possible, the essential argument comes down to this (after Gerring 2001):

1. a good social science has at least some aspects of the following methodological conditions amongst concepts, propositions and research design elements: coherence, operationalization, validity, field utility, resonance, contextual range, parsimony, analytic/empirical utility, specification, accuracy, precision, breadth, depth, innovation, intelligibility and relevance (this is not the full listing and has been truncated for the sake of expediency: see Gerring 2001 for the rest). Aspects of a number of these classifications have been touched on in Chapter 3, although direct explanations have been provided for only a few, such as utility. What is perhaps most important to take from this is less definitions around the terms, but instead the general meaning that these conditions demark social science from, for instance, politics, law or journalism;
2. a good social science exists, "…to help citizens and policymakers better understand the world, with an eye to changing that world...[and in this]…it is more important to *ask* the question of social science's purpose, in a serious and conscientious way than to provide a specific answer…[and further in relation to being] relevant to present-day problems and concerns" (Gerring 2001: 247-249 - italics are in original text: note that these statements have some similarity to the critical realist emancipatory elements that were discussed in Chapter 1);
3. therefore, use the methodology which will produce an appropriate outcome regarding point 2 above and use the selected methodology

as best dictated by the community of peers who developed, supported or extended it as largely defined by elements given in point 1 above;

4. the securing of point 1, 2 and 3 above is the securing (by and large) of a good social science; and,
5. PFL research broadly violates point 1, 2, 3 and therefore 4 above. That is, there is scant attention payed in PFL research to methodological issues in a broad sense - an outcome of which is the dominance of sample survey research and adherence to overtly mechanistic and abstracted models of data collection/analysis; further, there are common and widespread violations of methodological framings evident; and, specific answers are sought to only a few core questions which are constantly put forward (like how to get more landowners to manage) over asking what relevance the science has to landowners (and forests) when there is considerable evidence that points to the sheer diversity and complexity of landowner lives. The summation: PFL research in general does not constitute a social science, broadly speaking.

The relevance argument deployed above should not be mistaken as stating that good social science is only good if it is directly relevant to policy or similar debates amongst the citizenry. Rather, that relevance comes from *reflection* on whether the proposed work would be something citizens/policymakers would likely *care* about. On this basis and as part of a failure, an overwhelming amount of PFL research is focused on just one set of fairly specific landowner cares (those closely allied to the concerns of the forestry milieu).

What then is PFL research? As noted above, to its practitioners, writers and readers it is likely to be treated as a science (with all the problematic ramifications that this portends), but I argue that after removing the dysfunctional epistemic elements it is for all intents and purposes an unfavourable ideology that should not be allowed to pass for science. It should instead be treated as a *form of politics that uncritically supports and reinforces the social good (discussed in Chapter 4) inherent to the forestry milieu,* a social good that remains wedded to

capital and the state and largely non-responsive to civil society as a whole. In this, understanding is crippled and the chances of developing a more mature and meaningful social science are delayed if not significantly reduced for the foreseeable future.

Exceptions to the norm: PFL research that is scientific

There are three probable although partial exceptions to the criticism in the previous sub-section.

1. The literature case of Karppinen (1998), *Values and objectives of non-industrial private forest owners in Finland*. It is an exception because of all the literature accessed it alone managed to be consistently strong in conceptual, theoretical and research design elements. Further, it also investigates landowners worldviews (via values) as a process of potential change in landowners behaviour – a question that could be considered to deal with a consequence of modernity. Its partiality stems from not breaking the mould in terms of research methodology chosen (broadly, survey research), although this is a minor quibble.
2. The literature cases of Bliss and Martin (1989); Bliss (1992); Bourke and Luloff (1994); Egan and Jones (1993); Egan, *et al*., (1995). As noted, these cases all attempted methodological reform. Partiality, as noted in Chapter 4, stems from serious questions as to whether the authors actually understood the broader methodological considerations they were engaged with, as some confusion regarding methodological issues was found in their works.
3. Outside of the literature cases and drawing from the wider PFL literature is Luloff (1995), *Regaining vitality in the forestry profession: A sociologist's perspective* (the interest here is that this is the same Luloff of Bourke and Luloff (1994) as well as Egan, Jones, Luloff and Finley (1995), two of the literature cases investigated). It is a critique of the forestry milieu largely impelled from within the area of NIPF research and educational reform. Luloff (1995) makes the comment that:

> [f]orestry's biggest challenges come from society; unfortunately, far too many [forestry] professionals are not listening to people…[they]…must accept the premise that the traditional approach to training foresters needs to be broadened to include courses in communications, philosophy, sociology, psychology, and economics. Such training will provide a strong foundation for the creation of independent thinkers – people who provide answers that are reasoned and reflect more than standard myths (p. 9).

That this argument is a microcosm of the argument put forward here is not surprising as I drew on it as part of the process of forming up this thesis, but what is surprising, and in terms of its partiality, is that in that article there is no considered engagement with the concerns of forestry (social) science at the level of methodology. Admittedly, it is a powerful argument without this element and Luloff brings up good points regardless, but this issue of methodology is the central rationale of forestry social science and that it is missing seems to me to likely further underline the critique here that the dominant irrational rationality, at least with its troubled epistemic elements, remains in place even in this exemplary case of reflection and care.

In that these examples above provide real grounds for meaningful understanding of landowners and researchers in a reflexive sense, they also provide grounds for hope. It is to this hope that we now turn in providing a broad set of prescriptions for increasing the diversity of PFL research, an early starting point for recovery, reform and ethical reflection on the state of PFL research.

Prescriptions for the future…

This thesis has avoided explicit prescriptions for increasing theoretical diversity and the capacity for critique and dialogue inside the research community, as it would involve further extensive debate. At this point though, it is reasonable to suggest three potential options. They are aimed at the individual level, because structural level changes (*e.g.*, critique and dialogue capacity) would require an analysis of the actual research community, a topic not discussed herein. They focus on increasing the extent of diversity in the theoretical pool.

Option 1: within the mechanistic worldview

Diversity could be increased within the present dominant mechanistic worldview by simply engaging with theorisations of people (such as that found in YR87). This would add a dimension not found in abstract empiricism (and may implicitly push forward remnant-positivism or scientific realism, more preferable epistemologically in this worldview). Further, even within present approaches, standards could be raised to meet an adequate minimum of professional practice across all of the major stepwise processes in research. Considering the focus of most of the case studies, this essentially comes down to doing rigorously well planned and executed sample surveys. In this, it may serve to open the research conducted to more widespread dialogue beyond the boundaries of the private landowner scientific community. In a more challenging way, the concept of management (and for that matter of private forest landowner) could be put into an emancipatory (ethical) framing of some kind. This would inherently raise reflexive questions for the researchers, about who they are, who they might be serving and just what power mechanisms they are working in and on.

Option 2: a more critical and active approach from within a mechanistic worldview, but looking outwards

One of the more relevant approaches here is to focus more deeply on engaging with history and philosophy of science. This could occur to a level where there would at least be an understanding about the variety of scientific worldviews and basic epistemologies or research programs (paradigms) available. The emphasis should be to work up the idea that *not* one of them is necessarily superior to another. Next, a critical area in the present dilemmas about the Australian environment is to consider adequate theorisations of human-nature inter-relationships. This would probably mean learning from studies on value (*e.g.*, anthropocentrism and eco-centrism), similar to research into public forests which is generally a deal more robust than that on private forest landowners (for instance see; Bengston 1994; Steel, List and Schindler 1994; Manning, Valliere and Minteer 1999; Brown and Reed 2000; Vaske *et al*., 2001; McFarlane and Boxall 2003). Also here in terms of methods, techniques

and strategies practiced is the option of doing for instance more research akin to Bliss and Martin's (1989) research, which may not have overtly escaped from underneath a mechanistic worldview but at least let individual voices come to the surface of the research. An Australian example of such, although neither focused on PFL nor necessarily mechanistic in form, is that of Williams (2002).

Option 3: diversity across and within worldviews

A more challenging option would be to engage with different ontologies (and epistemologies), like critical realism (Bhaskar 1989), adaptive theory (Layder 1998) or realistic realism (Latour 1993)[24]. The question of conducting research as an emancipatory activity would require embracing ethics to a far deeper and more complex level than currently is the case within the PFL research literature (see generally: Engel and Engel 1990; Nash 1990; Goodin 1992; Hayward 1994; Tomsons 2001). Beyond this, more difficult theorisations surrounding human-nature inter-relationships, such as non-centred ecology (see Whiteside 2002), relational ethics (Jones and Cloke 2002), political ecology (Atkinson 1991; Latour 2004) and eco-feminist approaches (Plumwood 1993) might be considered (and this is by no means an exhaustive list of options, let alone authors). All of these options are difficult options, as there is grand theory involved that is simply not readily transferable to empirical work of the kind that dominates PFL research. Following in Derek Layder's (1998) footsteps though, comes the idea that orientating concepts can be used "…to 'crank start' the process of theory development in a piece of research" (Layder 1998: 101), and so even very abstract thinking can, with some work, provide ideas for powering research in a whole variety of different directions.

In terms of methods, techniques and strategies there is the option of undertaking process focused research rather than that focused on developing generalisations to population. Classically, this is in the mould of doing interpretive research, whether phenomenological,

[24] These three examples are all ontologically realist, and reflect that which I know best, but that does not disrupt the argumentative point that diversity is the primary issue and as such the choice can be of any ontology that so takes ones interest.

hermeneutical or symbolic interactionist in form (or to use other language; doing more constructionist, narrative based, anti-foundational research). Further out of the comfort zone in terms of methods, techniques and strategies is undertaking participatory research or action research. To be truthful, it is my opinion that the current scenario when approaching applied PFL research of seemingly considering survey research as the default technique could be inverted to consider participatory and action research first. It would certainly assist in opening PFL research up more directly to the consequences of its research practice in civil society. Finally, another option is to draw on empirical research (focusing at the individual actor level) that deals with forests but is from beyond the forestry milieu (and which covers a range of worldviews, including the mechanistic). Such research is likely to be devoid of such issues as the NIPF problem and attendant concerns important to the forestry milieu (for instance see; Cloke, Milbourne and Thomas 1996; Russell 1998; Kortelainen 1999; Coles and Bussey 2000; Noël, O'Connor and Tsang King Sang 2000; Reed 2000; Duncan and Duncan 2001; Henwood and Pidgeon 2001; Hull, Robertson and Kendra 2001; Ladkin 2001; Nightingale 2003).

Possible suggestions for further research

Although it may be considered somewhat of a shibboleth, there is the question of what further research possibilities emerge from this work. The primary response to this question should be shaped around developing the evidential and argumentative aspects necessary to show that PFL research could do with reform. Clearly, further research may show that the assertion made in this thesis is either flawed or no longer relevant, but this aside a variety of avenues immediately come into frame. The first framing is a frame to largely remove (except for option ten outlined below), as questions surrounding further research into the nature of science broadly are not of import. I believe that there is enough clarity and sophistication in that literature to allow an effective argument to be developed on any particular aspect of the sciences that might take

your fancy[25]. The framings that are of interest reside *within* the current PFL research community and there are nine of interest (with the tenth dedicated to science studies).

1. How do readers interpret text? It would certainly be worth exploring how other researchers, extension officers, policy makers, foresters, landowners and members of the public at large responded to various case literature examples. Along these lines is investigating just how much and what kind of impact the research output by the PFL research community actually has in terms of its stated aims.
2. Already it has been noted that this thesis did not investigate the actual research findings of the cases. It would be worth moving the statement about the research output as providing little understanding from an inference to an evidentially secured framing about what meaningful understanding is. In other words; what understanding does PFL research provide of landowners and forests (nature)?
3. What are the networks of association within the PFL research community? Already one such set of associations has been mentioned; that of Luloff with Bourke, Egan, Jones and Finley. Attendant to this is the question of how cohesive the PFL community is, how does it demarks its borders (*e.g.*, peer assessment of individual researchers) and how does it operate as a community (or perhaps communities). A further question is what its connectivity is to the forestry milieu and what is its connectivity beyond the milieu to other sciences and rationalities/ways of knowing beyond science?
4. What are the life-histories, experiential and practical knowledges of PFL researchers and what is the inter-relationship with their activities in the forestry milieu? Also, ask how researchers know nature and people (plus socio-nature or collapse the concepts entirely).
5. A variant of (4) is to look at what the history of the forestry milieu is in a locality (or localities) as compared to a localised study of landowners in relation to exploring the question of an irrational

[25] This is not to say that there is no areas of contestation or difficulty, rather it is to recognise that science studies have produced enough good research across enough topics to allow for solid, planned responses in reviewing a sub-disciplinary area such as PFL research.

rationality, notably in terms of the science produced, practices undertaken from out of the milieu and the social relations evident in the case study. Under empirical test, does it hold that the PFL research rationality really is irrational in society?

6. Is there a disjunct between forestry milieu professionals, landowners and the pressures/tensions of modernity? If so, what form or forms does it take? (This is a current topic of research, for instance see Bourke and Luloff 1994; Bliss *et al*., 1994).
7. A more difficult option is to critique forestry practices (*e.g*., surrounding ecological sustainable management) in tension with how people are living in amongst trees and forests (and this is not necessarily literally) where an overlap is readily discernable. This is less focused on asking people what they think, as to treat trees, forests and people in terms of a relational epistemology (see Jones and Cloke 2002; Milton 2002). Once this is done, the outcome could be contextualised with the PFL research community. At a guess, I would expect there to be a dislocation between such an outcome and the PFL community that opens up possibilities for discussing the PFL research community in relation to civil society. A less confrontational approach than this one is to use a currently acceptable set of theorisations (such as that of studies into value) focused on landowners, contextualised with local historical knowledge, and to compare the outcome with how PFL researchers have acted. This raises the question of how local knowledge/s and expert knowledge inter-relate and who may benefit or not, as the case may be, from control over knowledge/s (and practice/s).
8. Assuming the argument in this thesis holds, expanding upon and exploring how worldviews operate for PFL researchers and then creating options for multiplying the availability of worldviews for PFL researchers.
9. To undertake an action research project to engage PFL researches with the lack of critique and lack of theoretical diversity in their community (an option to be very cautious of undertaking).

10. Well away from the issue of engaging with the PFL research community, and perhaps looking at some basic research, would be to treat this and whatever other research that follows in this line as contributing to science studies. This may require increasing the rigour of the empirical component of this research by for instance, applying different tools in analysis (of which there are other good options than the ones used herein and which may cast a different or more extensive light on this topic) or actually moving into theorising proper, a step not undertaken in this thesis.

No doubt, with a little more thought, more research questions or topics could be generated. That said this gives a reasonable set of options for continuing the project of opening PFL research up to more diverse ways of knowing.

The section to follow concludes this thesis and wraps up the primary findings in context to the possibilities for PFL research into the future.

Diverse theorising, critical dialogue

Literature from the USA has dominated this analysis with a lesser although still important input from European literature. Broad lessons learned though are transferable to the Australian and to some extent the New Zealand context (due to the significant broad similarities between all these nation-states socio-economic, cultural, scientific and forest governance systems).

This thesis calls attention to the need for critical, value-rational, and methodologically-aware scientific research focused upon the nexus between private landowners and forests. This is in reflection to the continuing politicisation of and contest over vegetation on private property in Australia, since the 1990s. The ongoing tussle between the (administrative) state, political parties, landowners, interest groups and elements of civil society over who controls what on private land will affect many lives and have an appreciable affect on not only the politics of socio-nature, but the more general political environment in Australia. This alone reinforces the need for good science on this topic, and good science driven by ethically aware organisations (and institutions).

A further significant dimension of this research is that it calls attention to the current debates about the relationship between research practice, methodology and meta-theory within private forest landowner research. Midgley (2000) has effectively pointed out why it is necessary to attend to such questions by stating that:

> [i]n a society where most scientific practice is based on a methodology of experiment and observation, it would be all too easy (without a compelling counter argument) to be dragooned into conforming to the norm…philosophical arguments can help us to see practice in quite a different light than we might otherwise, and the new perspectives we can gain from this can be very valuable…Philosophical discourses provide one (but not the only) arena in which to judge the quality of methodological ideas. If we find contradictions between philosophical and methodological perspectives, then this is an indication that the adequacy of one or both of them might need to be reconsidered (Midgley 2000: 29-32).

To be in touch with these issues is as relevant to being in touch with the wavefront of literature within a topic area (such as private forest landowners). Although this presents some major difficulties in carrying out a research project (as many philosophical debates have little equivalent practical dimension), it has major advantages in offering the chance to produce relevant research for society/socio-nature. This kind of option has a positive spin-off, as it could increase inter-disciplinarity and trans-disciplinary research capacities. This is especially notable as private landowner researchers are in a strong position to capitalise on their connections to capital and the state in a research realm that straddles applied and topic contexts of socio-nature. Clearly, it could also help avoid:

> [d]isciplinary parochialism, and its close relative disciplinary imperialism, [which] are a recipe for reductionism, blinkered interpretations, and misattributions of causality (Sayer 2000: 7).

What I am saying in this chapter and more broadly in the thesis is that what we need to do in relation to applied PFL research is to more adequately understand where we are at, rather than where we would like to be. We have a lot of information on PFL landowners and more emerging all the time (notably in the USA and Europe), yet this literature tells us remarkably little about people's lives with the forests and

less still about what it might mean to ask what is good with landowners, forests and ourselves (as knowledge dealers) in terms of social life for the future. If anything, it still appears with research into private landowners that more of the same (survey research) is the norm. Where we would seem to like to be is to produce more of the same type of knowing, and knowing in places that is turned to the service of interest groups, rather than looking hard at what we have in hand and how we might more adequately understand what we might have (and how to get to those places instead).

To conclude, this thesis has detailed, in regard to private forest landowner research and how landowners are known, why we are where we are and where we could go. It stands in mildly reflexive critique to the literature as what we already know and how we make that so. In this, it has been determined that there is a normative commitment (the NIPF problem) evident in the case literature alongside an epistemic framing. Together, they constitute (and are evidence of) an interlocked scientific worldview or rationality which constrains how landowners are depicted as a research problem and then consequently how landowners get known, all of which delimits certain actions. Although, as noted, it is difficult in a literature review such as this to say unequivocally that this worldview or rationality comes to be activated in the world through (substantial) power mechanisms of some type, there are echoes in the literature to suggest that this occurs. The normative frame and the (empirical-normative) epistemic frame when translated into this or these mechanisms becomes an ideology. It is a powerful one, as it carries the trappings of an epistemic justificatory frame and authority well effaced in the word scientific that hides, to a considerable extent, the normative and the normative in the epistemic. It has cognitive, social and, some might argue, material weight disproportionate to nearly any other knowledge framing in Western society. It is also an unfavourable ideology due to the commitment to a single rationality and the attached consequences of that knowing in action - by and large, a blindness to researchers power to write others histories and how this may be a (moral and ethical) bad, if not properly understood for what it is. In this,

it behoves private forest landowner researchers to diversify their theoretical and discursive practice in their community, and establish contexts in which critical dialogue can operate in an environment of generally supportive consensus.

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Appendices

List of Appendices

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Appendix 1: Acknowledging interviewees

In the year 2000, I lived in the South-East of New South Wales, Australia, for seven months in relation to the sponsors outcomes and while there I interviewed the people below. The interviewees are split into two groups: landowners and stakeholders. Most landowner interviews ran for one to five hours and covered life paths in and amongst the forests. Most stakeholder interviews were from 30 minutes to one and a half hours. Sadly, in this research the dominance of the survey research component, following on in the later part of the field work and also after I had left the field, overwhelmed the synthesis of these many voices. I did draw to a degree on these interviews in constructing the survey, but the planned primary place of providing a rather different way of looking at forests has been lost to this research. Regardless, I am much indebted to all those who took time out to talk and who provided such hospitable and comfortable spaces in which to talk about trees and forests. They are:

- Alan and Lyn Scrymgeour (landowners)
- Alistair and Judy Clark (landowners)
- Bob and Deb Harris (landowners)
- Bob Smith (Blue Ridge Hardwood Mill)
- Brian Murphy (landowner)
- Bruce and Chris Hamilton (landowners)
- Bruce Major (landowner)
- Bruce St Hill (business owner – timber cutter)
- Chris Allen (Bega Environmental Network)
- Chris Slade (New South Wales State Forests)
- Dan Vandermeulen (business owner – carpenter)
- Dean Goodyer (business owner – timber contractor)
- Dirk Kamerling (business owner – furniture)
- Don McFee (New South Wales Department of Land and Water Conservation)

- Doug and Jennie Platts (landowners)
- Faye Campbell (Bombala Shire Council)
- Fergus and Carolyn McWhirter (landowners)
- Frank Whitelaw (Harris-Diashowa)
- Gerhard Wiedmann and Corinne Jenkins (landowners)
- Graham Moore (New South Wales Department of Land and Water Conservation)
- Graham Roche (Bega Valley Shire Council)
- Gus Waddell (Manna Park)
- Harriett Swift (Non-Government Organisation - ChipStop)
- Hugh and Annie Gravestein (landowners)
- Ian Lucas (landowner)
- Jackie Miles (business owner – consultant)
- Jay Stowe (New South Wales National Parks and Wildlife Service)
- Jeff Immison (Bega Valley Shire Council)
- Jeff Knight (business owner – tree farm)
- Jock Waugh and Liz Clark (landowners/Bega Valley Shire Council)
- John and Sue O'Brien (landowners)
- John Champagne (South Coast Producers Association)
- Justin Gouvernet (New South Wales Department of Land and Water Conservation)
- Keith Dawe (Bombala Shire Council)
- Keith Dore (Bombala Shire Council)
- Keith Reeve (Victorian Timber Industry Training Centre - Creswick)
- Kerry and Susie Pfeiffer (landowner and South-East Catchment Management Board)
- Len, Wayne and Thelma Wheatley (landowners)
- Lyle Westaway (business owner – miller)
- Mark Canaider (Bega Valley Shire Council)
- Mary McLean and Terry Wong (landowners)
- Max Beukers (New South Wales National Parks and Wildlife Service)

- Melanie Fisher (Commonwealth Department of Primary Industries and Energy)
- Michael Ryan (Commonwealth Department of Primary Industries and Energy)
- Neil Campbell (business owner - furniture)
- Neil Hampshire (New South Wales State Forests)
- Neville and Denise Murphy (landowners)
- Norm and Wendy Wilton (landowners)
- Peter Clinnick (Commonwealth Scientific and Industrial Research Organisation)
- Philippa and Robert Russell (landowners)
- Ray and Sonna Stewart (landowners)
- Ray Sirl (business owner – joinery)
- Richard Barcham (Bega Environmental Network)
- Richard Blakers and Anna Challis (landowners)
- Rick Hayes (business owner - consultant)
- Rob High (business owner – North-Eden Timber and other interests)
- Stephen and Mary Guthrey (landowners)
- Stephen Targett (Landcare)
- Steve Beaman (New South Wales Environment Protection Agency)
- Steve Goodyer (Bombala Shire Council)
- Ted and Dorothy Johnston (business owner - furniture maker)
- Tim Shepherd (New South Wales National Parks and Wildlife Service)
- Vic Jerskis (New South Wales State Forests)
- Vince Andreana (Greening Australia)

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Appendix 2: Summary of sponsor report

This is a copy of the text from a two page flyer, prepared for the sponsor, that summarised the results from the research report given to the sponsor (in April 2003).

Private landowners and their forests: Recreational and aesthetic uses come out tops!

INTRODUCTION

Over 2001 and 2002, the School of Resources, Environment and Society at the Australian National University carried out research into the uses and values that private landowners in the Bega Valley and Bombala Shire zones have for native forest on their properties. This research was sponsored by South-East NSW Private Forestry (a local extension organisation supporting the management of private forests) and was aimed at obtaining some idea of just what land-owners were doing, and planning to do, with their native forest. The results from this research are summarised here, as drawn from a report given to the sponsors. Further details are given at the end of this summary if more information is desired.

The research was broken into a number of parts, which included questions on: (a) use of forest, both in the immediate past and plans for the next 10 years; (b) forest values, dealing with ecological sensitivity, stewardship and environmental values; and (c) socio-demographic information.

PAST AND FUTURE USES OF NATIVE FOREST

By far, recreational and aesthetic uses were consistently the most common and important. Questions were posed about 20 different uses that landowners could have undertaken in the previous year and 24 different intentions that landowners might have for their native forest

over the next 10 years. Of the 76% of respondents who indicated that they used their native forest in the previous year, it was found that 89% sought solitude or privacy, 89% observed wildlife and/or plants and 87% walked or hiked in their native forests. Of the 63% of respondents who indicated that they had plans for their native forest over the next 10 years, it was found that 83% indicated that it was important to maintain their native forest for solitude or privacy, 81% for observing wildlife and/or plants, and 79% for maintaining or improving the native forest for its natural beauty.

Generally, activities concerned with supporting the property obtained lower responses. For example, of those respondents who indicated that they used their native forest in the previous year, it was found that 57% collected timber for on-property use, 50% acted to reduce fire risk and 45% controlled pests or diseases.

Activities focused on earning an income from native forests in the previous year received some of the lowest responses, as only 5% farmed non-timber forest products for sale and 4% harvested timber for sale. Although the short time frame arguably played a part in these low percentages for earning an income, a similar pattern occurred in responses to the intention questions.

Although the dominance of recreation and aesthetic uses may come as a surprise to some, it mirrors similar findings overseas, as does the lower interest and activity in timber harvesting.

VALUING FORESTS AND THE ENVIRONMENT

Private forest landowners, on the whole, have a high degree of ecological sensitivity, indicated by an awareness of the impacts of their actions on the environmental condition of their forest and the species in it. Further, they have a strong sense of stewardship over their forest. Interestingly, 53% agreed (and 40% disagreed) that 'owners of native forest on private property should be able to do as they please with their forests', while 78% agreed (and 12% disagreed) that 'government should have a strong role in overseeing landowner use of their forest'. The apparent contradiction between these results may indicate landowners believe

they are able to take care of their own forests but that others may need more oversight, although it is not possible to explain these results without further study.

When asked questions on their environmental values, landowners agreed strongly with eco-centric statements in which the environment is seen as worthy of protection or preservation. They agreed less strongly with utilitarian statements in which the environment is valued for the use and benefits it provides for humans. The majority disagreed with pro-development statements in which it is considered acceptable to exploit the environment in a possibly destructive way for economic gain. However, some of the results, particularly the high level of agreement with the statement that 'if carefully managed, privately owned native forest can both provide products from the forest and conservation outcomes', indicate that landowners can hold both eco-centric values and be willing to consider using their forests to obtain certain goods (such as timber for on-property use).

CONLCUDING COMMENTS ON USES AND VALUES

Uses that landowners in South-East NSW make of their native forest are many and varied. Uses of a recreational or aesthetic nature are the most commonly engaged in on a day-to-day basis. They are also the most commonly planned uses that landowners wish to undertake during the next 10 years. This, in part, may relate to the amount of energy and time that has to be applied to undertake more complex and involved activities, but there appears enough evidence to cautiously suggest that many landowners are quite comfortable with this form of relationship with their native forests. Further, use of native forests by landowners to support the property or house-hold are, by and large, less common than recreation or aesthetic uses. These include the harvesting of timber for on-property use, reducing fire risk and controlling pests and diseases, all of which are carried out by about half of the respondents to the survey who indicated that they used their forests. Generally, the least important uses, both current and planned, are those that contribute to an

income or earnings. Included in this are the specific uses of harvesting timber and the more general provision of employment opportunities.

Private forest landowners generally indicated an awareness of their native forests as an important part of the landscape, both social and natural. They largely recognise the role their forests may play in the lives of future generations and value both their own forests and forests in the landscape for their inherent value and for their value as sources of beauty and leisure. The role of government in overseeing native forest on private land is recognised, but landowners clearly are protective of their private rights in relation to control over their forests. Finally, even though there appears a general resistance to production activities in native forests, there also appears an understanding that, with care, native forests can yield forest products and be conserved at the same time (although this issue needs more exploration to determine just 'which' forest products and how they would be obtained while meeting certain conservation goals).

SOCIO-DEMOGRAPHIC DETAILS ON RESPONDENTS

- Median age of respondents was 52 years and this was well above the median age of Bega Valley and Bombala Shire respondents in the 2001 census.
- The survey population was more highly educated compared to the population of the Bega Valley and Bombala Shires in the 2001 census.
- Average length of property ownership was 26 years and approximately 75% of landowners had owned their property for less than 26 years.
- Property sizes ranged from 3 to 4,600 hectares (ha), while forest sizes ranged from 2 to 1,012 ha. Within this range the majority of landowners owned smaller properties, with the median property size being 47 ha with a median forest size of 30 ha. A small number of landowners owned the majority of land and forest.
- Sixty-five percent of respondents had their primary residence on a rural property, while 16% lived in a capital city and another 6% in

other cities with over 100,000 people. The remainder had their primary residences in towns or cities of less than 100,000.

RESEARCH STRATEGY AND METHOD

The data in this study was collected using a self-administered mail-questionnaire directed through a sample-survey framework. From a sample population of 1,758, a total of 625 people were randomly selected. The questionnaire was administered over August-September 2001. The total response rate from the 625 landowners selected was 375 (60%), although useable responses were 317 (51%). The data analysis was statistical. Finally, it is important to note that after an assessment of non-response to the survey, it was considered possible that the survey over-samples those landowners who are likely to be more sympathetic to positions that emphasise the protection or preservation of nature. The consequences of this statement, if true, should be kept in mind when reading the results from this research.

FURTHER INFORMATION

- This research was sponsored by South-East New South Wales Private Forestry and is a component of a Masters thesis undertaken (by Peter Deane) at the ANU.
- The report on the research is titled: How private landowners use and value the native forest they own. To obtain an electronic (Adobe PDF) copy of the report (file size is 4.7 MB), please direct your internet browser towards: <http.//sres.anu.edu.au/publications/index.html> (current at July 2003).
- If you would like a copy of the (103 page) report mailed to you or to find out further information on managing private forests, please contact either Louise Maud or Cary Jones at SE NSW Private Forestry, P.O. Box 867, Bega, New South Wales, Australia, 2550. Telephone: (02) 6492 5578; Facsimile: (02) 6492 3700. <E-mail: maud@privateforestry.com>. WWW page: <http.//www.privateforestry.com>.

- The author's of the report (Peter Deane, Jacqueline Schirmer, and Dr Jüergen Bauhus) can be contacted at the School of Resources, Environment and Society, Australian National University, Canberra, Australia, 0200. Telephone: (02) 6125 2579; Facsimile: (02) 6125 0746. < E-mail: sres@anu.edu.au>. WWW page: <http.//sres.anu.edu.au>.

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Appendix 3: Topics and associated literature[1]

No.	Topic area	Example author/s
1	Management plans (and planning)	Gramann, Marty and Kurtz (1985); Stevens *et al*. (1999); Pykäläinen (2000); Egan, Gibson and Whipkey (2001).
2	Timber production and management	Hickman (1984); Hyberg and Holthausen (1989); Lönnstedt (1989); Alig, Lee and Moulton (1990) (review article); Lindsay and Gilbert (1991); Egan and Jones (1993); Henry and Bliss (1994); Cleaves and Bennett (1995); Hyttinen and Kola (1995); Rosen (1995); Kuuluvainen, Karppinen and Ovaskainen (1996); Johnson *et al*. (1997); Kärhä and Oinas (1998); Ripatti (1999); Brazee and Amacher (2000); Kline, Alig and Johnson (2000b).
3	Farm forestry (notably plantations)	Fairweather (1996); Emtage and Specht (1998); Emtage, Herbohn and Harrison (2000); Schirmer, Kanowski and Race (2000).
4	Information and knowledge transfer	Haymond (1988a); Haymond (1988b); Baldwin and Haymond (1994); Tyson, Broderick and Snyder (1998).
5	Personal identity	Bliss and Martin (1988).
6	Comparison between forest landowners and non-owners	Bliss *et al*. (1994); Jones, Luloff and Finley (1995) (summary article).
7	Objectives or goals of landowners	Young, Reichenbach and Perkuhn (1985); Karppinen (1997). Clearly, this category also includes the cases utilised in this thesis (for a listing see Table 2.3, Chapter 2).
8	Broad-scale approaches	Some literature utilised large aggregated data sets of private forest landowners, e.g., Løyland, Ringstad and Oy (1995); Moulton and Birch (1995); Pesonen (1995); Lidestav (1998) or focused on broader processes regarding private forest landowners, such as Cordell and Tarrant's (2002) research into the effect of population change (value shifts and other broad drivers) on forest use.
9	Unavailable literature	Research such as Jennings and van Putten (2003), although directly relevant, were published after this analysis was conducted.

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[1] The literature review for this study was not exhaustive and reaches to the start of 2001. Further, parts of the literature are denied the author due to non-availability in English and other parts of the literature are difficult to obtain, existing in the 'grey' literature (of government departments, unpublished reports and the like).

Appendix 4: Similar studies

No.	Year	Author/s	Similar studies
1	1987	Young and Reichenbach	A similar study was Young, Reichenbach and Perkuhn (1985).
2	1988	Marty, Kurtz and Gramann	This paper has been included, as it draws of an earlier paper on Missouri but also adds in Wisconsin and another typological level.
3	1989	Bliss and Martin	Has similarities to Bliss and Martin (1988).
4	1997	Bliss, Nepal, Brooks and Larsen	Has connection to the paper Bliss, Nepal, Brooks and Larsen (1994).
5	1997	Lönnstedt	Similar paper to Lönnstedt (1989).
6	1998	Karppinen	Karppinen has written numerous works on this topic, an example being Karppinen (1997). It is quite similar in many ways to her 1998 work and will not be covered here. Also, see Kuuluvainen, Karppinen and Ovaskainen (1996). This paper uses Karppinen's results with a theoretically derived timber function, in order to see what effect landowner objectives has on timber harvest rates.
7	1998	Kuhns, Brunson and Roberts	This study was a part of Brunson, Yarrow, Roberts, Guynn and Kuhns (1996).
8	2000	Dettman, Hamilton and Curtis	A Land and Water Resources Research and Development Corporation report, by Hamilton, Dettmann and Curtis (2000), titled: Landholder perceptions of remnant vegetation on private land in the Box-Ironbark region of Northern Victoria.
9	2000(a)	Kline, Alig and Johnson	Similar paper using the same data set; Kline, Alig and Johnson (2000b).

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Appendix 5: Questions in the literature

Who did the research?[1]	Where was it conducted?	What questions were posed?
Birch ('98)	Virginia, United States of America	(1) Amalgam of three separate studies conducted (by the authors) into what the management practices of landowners are.
Blatner ('89)	Arkansas, United States of America	(1) What are the attitudes of NIPF landowners towards timber production and management?
Blatner ('91)	Washington, United States of America	(1) What are the management activities of landowners; and, (2) what assistance and education programs do landowners use?
Bliss ('89)	Wisconsin, Untied States of America	(1) What can contrasting the results from quantitative and qualitative methods tell us about the factors which motivate NIPF landowners to practice forest management?
Bliss ('92)	Wisconsin, United States of America	(1) To what extent are forest management attitudes and behaviours related to ethnicity?
Bliss ('97)	Southern United States of America	(1) How do (defined) socio-demographic concepts affect activities in the forest (especially timber selling behaviour)? (2) Will forest owners be more comfortable with management actions (on private, industry and government land), such as clearcutting, prescribed fire and herbicide use, than members of the public? (3) How do environmental value/objectives compare against economic (value) objectives of owners and non-owners? (4) To what extent do owners and non-owners support or reject the contention regarding the right of individuals to do as they want on their properties versus the right of a society to expect that the environment will be protected from degradation? (5) What role do government regulations over tree cutting on private land have in environmental protection objectives?
Bourke ('94)	Pennsylvania, United States of America	(1) How do the opinions of NIPF landowners about forests and forest policy compare to the general public?
Broderick ('94)	Connecticut, United States of America	(1) What attitudes do NIPF landowners have towards open space planning and the protecting of forest from development? (2) To what extent do landowners relate to a stewardship ethic? (3) What characteristics do landowners who have a stewardship ethic hold, and what characteristics differentiate them from those who do not have a stewardship ethic? (4) What estate planning knowledge do landowners have, how do they use if and how does it feed into long term objectives of ownership?

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[1] Note that each author listing has been shortened to the first authors name in order to save space across all of the following tables.

Who did the research?	Where was it conducted?	What questions were posed?
Brooks (‘86)	North-eastern United States of America	(1) Amalgam of studies, but focused on (1) an assessment of the characteristics of NIPF landowners; (2) attitudes and intentions towards forest (use) management; and, (3) opportunities and constraints for wildlife management.
Brunson (‘96)	United States of America (11 states)	(1) How extensive is NIPF landowners knowledge of eco-system management? (2) What are their beliefs about ecosystem management? (3) Under what conditions would they be willing to join ecosystem management partnerships? (4) What does a comparison of the regions this research covers reveal?
Dettmann (‘00)	Victoria, Australia	(1) What was the quality of (Box-Ironbark) forest on landowners properties? (2) What was its extent? (3) How was it valued? (4) What plans for management were there?
Egan (‘93)	Pennsylvania, United States of America	(1) What are landowners stewardship attitudes? (2) To what extent are landowners expressed attitudes to stewardship reflected in their actions?
Egan (‘95)	Pennsylvania, United States of America	(1) What is the condition of NIPF landowners forest? (2) What knowledge of forest management do NIPF landowners have? (3) What are the objectives and intentions of landowners? (4) How might protocols be developed to assist field investigators to understand NIPF landowners?
Forestry (‘82)	Tasmania, Australia	(1) What is the total wood available to industry from privately owned forests? (2) What are the attitudes to forest management of landowners? (3) What do landowners know about potential assistance that can be provided to them?
Greene (‘86)	Arkansas, United States of America	(1) What characteristics differentiate timber managers from non-managers?
Jenkins (‘98)	Southern-Western Australia	(1) What are the attitudes of farmers to native vegetation on their properties? (2) What are the effectiveness of funding schemes in attitude change? (3) What are the opportunities and constraints in remnant vegetation management? (4) What are the sources of information for farmers on Landcare?
Kangas (‘96)	Finland	(1) What were Finn's general feelings about forest management and utilisation? (2) What should be the objectives and uses for Finnish forests? (3) What were the differences in value over forest between different parts of the Finnish population (including forest owners)?
Karppinen (‘98)	South-eastern Finland	(1) Amalgam of two separate studies – incorporates; (a) to describe the forest values and long-term objectives of NIPF owners; (b) to identify owner types as based on values and objectives; and, (c) to detail silvicultural and harvesting behaviour of NIPF owners.
Kingsley (‘88)	West Virginia, United States of America	(1) What are the motives and objectives of landowners?
Kline (‘00)	Oregon and Washington, United States of America	(1) What are landowners objectives for their forests? (2) What is their willingness to accept incentives to forgo harvesting so as to improve wildlife habitat?

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Who did the research?	Where was it conducted?	What questions were posed?
Kuhns (‘98)	Utah and Indiana, United States of America	(1) What are the management practices of landowners? (2) What were the background of landowners forest education and general education? (3) Where did landowners obtain information on management practices? (4) How do landowners wish to learn about management?
Kurtz (‘81)	Missouri, United States of America	(1) What factors influence landowners in the use and management of their forests? (2) How are these factors linked to timber production? (3) How might landowners behaviour be changed to increase management for timber production?
Lönnstedt (‘97)	Uppland, Sweden	(1) What are the main goals (objectives) of NIPF landowners? (2) What are their time perspective’s? (3) How are timber cutting opportunities/decisions identified? (4) How are different selling options identified?
Marty (‘88)	Missouri and Wisconsin, United States of America	(1) Comparison of typological constructs of private non-industrial forest owners attitudes and management practices between two American states.
Northern (‘99)	New South Wales, Australia	(1) What are the management intentions of landowners? (2) What advice do landowners need to manage their resource?
O'Hara (‘91)	North-west Minnesota, United States of America	(1) What is an effective way to improve timber marketing, harvesting and management in privately owned forests?
Rickenbach (‘98)	Massachusetts, United States of America	(1) What are landowners attitudes towards ecosystem management?
Schuster (‘78)	Montana, United States of America	(1) Why is forest owned? (2) What reasons existed for undertaking timber harvest or for not undertaking timber harvest?
Sinclair (‘00)	Connecticut, United States of America	(1) What are the attitudes of NIPF landowners to the utilisation of geographic data in the management/stewardship of their forests? (2) How can this be used to improve ecosystem based management of forest?
Wilson (92)	Catlins, Aoteaora/New Zealand	(1) What are the attitudes of landowners to remnant forests on their properties? (2) How does this compare with similar studies elsewhere in the world?
Wilson (‘95)	Australia	(1) What farmers plant trees? (2) What characteristics do those farmers have? (3) What area was planted? (4) What purpose where trees planted? (5) What financial arrangements surrounded those planting’s? (6) What benefits come from planting trees? (7) What is the extent of native forests and woodlands on farms? (8) What are the functions of native forests and woodlands?
Young (‘87)	Illinios, United States of America	(1) What factors influence landowners intention (over the next ten years) to produce timber or other products from their forests? (2) How might their behaviour be changed to favour producing timber and other products?

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Appendix 6: Concepts in the literature

Who did the research?	Concepts used and extent of definition		
	Defined	**Partial definition**	**Not directly defined**
Birch ('98)	Nil	Nil	•Harvesting •Management •Objectives
Blatner ('89)	Nil	Nil	•Management •Sellers •Use
Blatner ('91)	Nil	Nil	•Forest management •Ownership objectives
Bliss ('89)	•Active management •Forest managers	Nil	Nil
Bliss ('92)	•Ethnicity	Nil	•Forest management
Bliss ('97)	•Forest owner •NIPF landowner	Nil	•Environmental value •Forest management practice
Bourke ('94)	Nil	Nil	•Forest attitudes •Management
Broderick ('94)	•Stewardship	Nil	•Use objectives
Brooks ('86)	Nil	•NIPF	•Timber management •Wildlife management
Brunson ('96)	•Ecosystem management	Nil	•Stewardship
Dettmann (2000)	•Remnant vegetation	Nil	•Management •Value
Egan ('93)	Nil	Nil	•Forest management •Stewardship
Egan ('95)	Nil	•Forest stewardship	Nil
Forestry ('82)	Nil	Nil	•Forest management •Intended use
Greene ('86)	Nil	Nil	•Timber management •Timber objectives
Jenkins ('98)	Nil	Nil	•Vegetation management •Vegetation values
Kangas ('96)	Nil	Nil	•Forest nature •Management •Utilisation
Karppinen ('98)	•(Forest) value •Long-term objectives	Nil	Nil
Kingsley ('88)	Nil	Nil	•Objectives

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Who did the research?	Concepts used and extent of definition		
	Defined	**Partial definition**	**Not directly defined**
Kline (‘00)	•Utility	Nil	•Forest management •Objectives
Kuhns (‘98)	Nil	Nil	•Forest management •Landowner knowledge
Kurtz (‘81)	•Constraints •Motivations •Objectives	Nil	•Management •Timber production •Use
Lönnstedt (‘97)	•Goals •Objectives •Selling option	Nil	•Cutting opportunity
Marty (‘88)	•Forest Management	Nil	•Constraints •Motivations •Objectives •Timber production •Use
Northern (‘99)	Nil	Nil	•Management intent
O'Hara (‘91)	Nil	Nil	•Objectives
Rickenbach (‘98)	•Ecosystem management	Nil	Nil
Schuster (‘78)	•Commercial forest lands	Nil	•Ownership
Sinclair (‘00)	•Ecosystem based management	Nil	•Management •Stewardship
Wilson (92)	•Naturalistic •Utilitarian	Nil	•Use
Wilson (‘95)	•Native forests and woodland •Plantation regime	Nil	•Functions (uses) of native forest and woodland •Intention (to clear)
Young (‘87)	•Attitude •Behaviour •Intention •Norms	Nil	•Timber production •Use (objectives)

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Appendix 7: Theories in the literature

Who did the research?	Primary approach to (social/ psychological) theory	Any theory used to describe or understand human behaviour/ society?	Any theory used to describe or understand human-nature inter-relationships?
Birch (’98)	No theory - descriptive	None noted	None noted
Blatner (’89)	Theory testing	None noted (although the analysis does rely on a posited model of behaviour linked with the statistical analysis method of paired comparisons)	None noted
Blatner (‘91)	No theory - descriptive	None noted	None noted
Bliss (‘89)	Theory construction and theory testing	None noted	None noted
Bliss (‘92)	Theory construction and theory testing	None noted, though suggested through the definition of ethnicity	None noted
Bliss (‘97)	Descriptive - theory testing	None noted	An unspecified model (linked to, for example, Dunlap and Mertig 1992) of environmental attitudes and value, not made explicit
Bourke (‘94)	Theory testing	An unreferenced mental hierarchy model, not made explicit	An unspecified model of environmental attitudes and value (un-referenced, though critiquing Dunlap and Van Liere (1978) and Catton and Dunlap (1978, 1980)), not made explicit
Broderick (‘94)	Descriptive - theory testing	None noted	Partial, articulated around the concept of stewardship, but not made strongly explicit nor fully referenced
Brooks (‘86)	No theory - descriptive	None noted	None noted
Brunson (‘96)	Descriptive - theory testing	An unreferenced mental hierarchy model, not made explicit	None noted
Dettman (‘00)	No theory - descriptive	None noted	None noted
Egan (‘93)	Theory construction and theory testing	A referenced mental hierarchy model (Fishbein 1967), not made explicit	None noted
Egan (‘95)	Theory construction and theory testing	An unreferenced mental hierarchy model, not made explicit	An unspecified (and unreferenced) model of environmental attitudes and value, not made explicit

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Who did the research?	Primary approach to (social/ psychological) theory	Any theory used to describe or understand human behaviour/ society?	Any theory used to describe or understand human-nature inter-relationships?
Forestry (‘82)	No theory - descriptive	None noted	None noted
Greene (‘86)	Descriptive - theory testing	None noted (although the analysis does rely on a posited model of behaviour linked with the statistical analysis method of discriminant analysis)	None noted
Jenkins (‘98)	No theory - descriptive	None noted	None noted
Kangas (‘96)	Theory testing	An unreferenced mental hierarchy model, not made explicit	An unspecified (though referenced) model of environmental attitudes and value, not made explicit
Karppinen (‘98)	Theory testing	A mental hierarchy model linked to a variety of authors (*eg*., Rokeach 1973; Allardt 1964 and 1983), not made explicit	A specified forest value typology (Pietarinen's (1987) which is linked to anthropocentric and biocentric orientations)
Kingsley (‘88)	Theory construction	None noted	None noted
Kline (‘00)	Theory testing	A referenced utility model, which is made explicit	None noted
Kuhns (‘98)	No theory - descriptive	None noted	None noted
Kurtz (‘81)	Theory testing	An unreferenced mental hierarchy model, not made explicit	None noted
Lönnstedt (‘97)	Theory construction	A mental hierarchy model (linked to Kleindorfer *et al* 1993), made explicit	None noted
Marty (‘88)	Descriptive - theory testing	None noted (although this paper makes extensive use of previous work - see Kurtz and Lewis 1981 and Marty 1983)	None noted
Northern (‘99)	No theory - descriptive	None noted	None noted
O'Hara (‘91)	No theory - descriptive	None noted	None noted
Rickenbach (‘98)	No theory - descriptive	None noted	None noted
Schuster (‘78)	No theory - descriptive	None noted	None noted
Sinclair (‘00)	Descriptive - theory testing	An unreferenced mental hierarchy model, not made explicit	None noted (although reference is made to the New Environment Paradigm and other research into environmental attitudes, it is not as a component of the research practice, rather in commenting on the results)

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Who did the research?	Primary approach to (social/ psychological) theory	Any theory used to describe or understand human behaviour/ society?	Any theory used to describe or understand human-nature inter-relationships?
Wilson (‘92)	Descriptive - theory testing	An unreferenced mental hierarchy model, not made explicit	A specified environmental ethic linked to a variety of authors (*eg*., Kellert 1984), and made explicit. Did not though, appear to use as part of the operationalisation of concepts (for the survey conducted)
Wilson (‘95)	No theory - descriptive	None noted	None noted
Young (‘87)	Theory testing	A referenced and explicit mental hierarchy model (Fishbein and Azjen's (1975) theory of reasoned action)	None noted

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Appendix 8a: Techniques in the literature I

Who did the research?	Research technique	Particulars of practice	Method: data collection/ selection	Method: of data analysis/ synthesis
Birch ('98)	•Extensive	Amalgam of three studies drawing from two surveys: (1) 531 landowners from 6 counties; (2) 313 landowners from all of the state.	•Interview questionnaire •Mail survey	•Statistical: frequency tables, bar charts and similar
Blatner ('91)	•Extensive	Using a government database, and selecting forested parcels randomly from it, a 1,600 strong sample population was created. 910 useable replies were received (69%). Used Dillman's (1978) Total Design Method.	•Mail survey	•Statistical: frequency tables
Blatner ('89)	•Extensive	200 landowners (50 from four geographical areas), as selected from a previously conducted survey (with a pool of 985 respondents). Grouped as timber managers and non-timber managers (to be a manger, two of five survey timber management practices had to have been undertaken); then grouped again by timber sellers (anyone who had made any type of sale of timber) and non-sellers.	•Personal interviews (utilising psychometric measures)	•Statistical: paired comparisons (using significance tests)
Bliss ('89)	•Mixed methodology: intensive overall, but utilising intensive and an extensive sub-model	16 landowners (26 family members in total) who were active managers of forest as defined by a criteria list; (a) received a 'tree farmer of the year award', (b) chosen by local foresters, (c) government records had to verify management activities. The semi-structured interviews were mixed with a survey (replicated from an earlier study).	•Mail survey •Unstructured interviews •Document analysis •Participatory field walks	•Thematic coding •Statistics: frequency tables
Bliss ('92)	•Intensive	Non-random sample of 20 cases. 16 cases selected as model forest managers (all where considered as 'outstanding tree farmers in a competition run by a government agency'). 4 cases were selected by local foresters as 'non-managers'.	•Unstructured interviews •Field inspections •Document analysis	•Thematic coding

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Who did the research?	Research technique	Particulars of practice	Method: data collection/ selection	Method: of data analysis/ synthesis
Bliss ('97)	•Extensive	Random digit dial survey across 201 counties of the Tennessee Valley region. Stratified with random selection of gender once contacted. Weighted sample size of 996 households. Forest owners were those reporting ownership of one or more acres of forest.	•Telephone survey	•Statistical: frequency tables, measures of central tendency, t and z statistic
Bourke ('94)	•Extensive	After 4191 contacts, a 1201 sample population was obtained, split 600 with general public, 601 with landowners.	•Telephone survey	•Statistical: frequency tables, measures of central tendency, t-test, ordinary least squares
Broderick ('94)	•Extensive	408 landowners (out of 8,606) who owned at least 25 acres of woodland registered under the forestland category of Connecticut's use value assessment law (286 responded - 70% response rate). To be included, 20 acre parcels and larger only. Pre-tested on 8 landowners. Used Dillman's (1978) Total Design Method.	•Mail survey	•Statistical: frequency tables
Brooks ('86)	•Extensive	Amalgam of the findings of 14 USDA surveys across the North-east of the USA.	•Unknown	•Statistical: frequency tables
Brunson ('96)	•Extensive	Amalgam of 11 surveys. Lists tend to be generated or obtained from USA state authorities. Utah and Indiana sample populations were 750 each (response was 335 (54%) and 554 (78%) respectively). For Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Virginia a total sample population of 500 was taken (response was 368 (74%)). Was pre-tested on 100 people.	•Mail survey	•Statistical: frequency tables and some content analysis
Dettman ('00)	•Extensive	552 landowners (across eight catchments) in survey population based on ownership of Box-Ironbark, receiving 358 responses (72% response rate).	•Mail survey	•Statistical: one way ANOVA, Chi-square, frequency tables

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Who did the research?	Research technique	Particulars of practice	Method: data collection/ selection	Method: of data analysis/ synthesis
Egan ('93)	•Mixed methodology: extensive overall, but utilising intensive and extensive sub-models	31 cases. Little other information.	•Unstructured interviews •Ecological - series of measures taken of forest condition	•Statistical: factor analysis and canonical correlation analysis
Egan ('95)	•Mixed methodology: utilising intensive and extensive sub-models, difficult to determine overall focus (extensive?)	All members of three forest organisations (census) in Pennsylvania. 210 responses (86%). Focus group - two sessions of eight landowners each. Random choice of participants from county tax list (approximately 1000 strong). Delphi - 24 forest experts from a variety of stakeholder groups.	•Mail survey •Focus group •Delphi process	•Statistical: frequency tables, metric assessment (scaling/central tendency) •Thematic coding
Forestry ('82)	•Extensive	676 strong sample population (though not possible to determine duplicates - total number in sample is obscured).	•Personal interview questionnaire	•Statistical: frequency tables, chi-square
Greene ('86)	•Extensive	800 randomly selected woodland owners (out of 3,200) in the 4 physio-geographic regions of Arkansas (approximately 42% response rate, useable responses rated from 26% to 33% across all four regions).	•Mail survey	•Statistical: discriminate analysis
Jenkins ('98)	•Extensive (hard to determine)	143 sample population. Randomly selected from government database (on agriculture landowner details).	•Interview questionnaire	•Statistical: measures of central tendency
Kangas ('96)	•Extensive	Finnish and Swedish speaking Finns of 15-75 years of age from the Finnish central census registrar. Population sample (stratified and weighted by country) of 2000 developed, with a useable response rate of 1,368 (67%). 24% of all respondents were forest owners (both private and consortium based). Evidence of a reasonably robust survey.	•Mail survey	•Statistical: Chi-square and ANOVA

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Who did the research?	Research technique	Particulars of practice	Method: data collection/ selection	Method: of data analysis/ synthesis
Karppinen (‘98)	•Extensive	The interview and survey were collected at different times and scales, but used the same population design principles. Landholdings were given a probability to enter the sample proportional to their area, though unspecified is the list from which the sample population was actually built.	•Mail survey •Structured personal interviews	•Statistical: principal component analysis, t-test, K-means clustering, logit model
Kingsley (‘88)	•Intensive	Retired resident landowners (four groups). Little other information.	•Focus group	•Thematic (content) analysis
Kline (‘00)	•Extensive	NIPF landowners were drawn from a list of country tax files, and a random sample was taken for 38 counties based on the proportion of NIPF land in each county. 1,731 contacts were made for a result of 1,004 useable responses (58% response rate). Of this only 461 eventually entered the final calculations, as only this many actually provided answers across all the necessary questions in the survey.	•Telephone survey	•Statistical: Student's t-test, factor and cluster analysis, utility function
Kuhns (‘98)	•Extensive	Utah and Indiana focus. 750 population. 554 (78%) return from Indiana/334 from Utah (54%). Not much detail on this, though sub-study of Brunson/Yarrow study above.	•Mail survey	•Statistical: frequency tables
Kurtz (‘81)	•Extensive	30 landowners initially, then another 60 landowners chosen on a variety of diverse characteristics (age, occupation, residency, acreage owned, forest acreage, management objectives).	•Q-sort (un)structured questionnaire interview	•Statistical: Q-sort analysis, frequency tables
Lönnstedt (‘97)	•Intensive (hard to determine)	Local forestry-board list of landowners who represent a variety of characteristics (mix of; length of ownership, must have a forest plan, must have announced an intention to harvest in next 3 years, must have between 25-100 hectares of forest). Snowball sampling procedure and obtained 35 people. Owners of deceased estates were excluded from the study as they are a separate category (for the author).	•Personal interview	•Unknown, but by all appearances some kind of descriptive (heuristic) narrative model (from Smith 1990)

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Who did the research?	Research technique	Particulars of practice	Method: data collection/ selection	Method: of data analysis/ synthesis
Marty (‘88)	•Extensive	See Kurtz and Lewis 1981 (draws upon).	•See Kurtz and Lewis 1981	•See Kurtz and Lewis 1981
Northern (‘99)	•Extensive	List drawn from 35 LGA's across Northern (coastal) NSW. Formed from holdings over 100 hectares. Total population 10,161/2,128 sample size (21% of total pop)/254 responses received (12% response rate).	•Mail survey	•Statistical: frequency tables
O'Hara (‘91)	•Extensive	5,864 original list of landowners in 5 counties owning 10+ acres. 1000 landowners. 699 replies with 617 useable (71%). Stratified by county. Used Dillman (1978).	•Mail survey of population •Telephone survey of wood buyers	•Statistical: frequency tables, subset analysis (not explained directly), some kind of probability test
Rickenbach (‘98)	•Extensive	Using property tax rolls, 1,250 landowners were randomly selected. 771 responses were received, and useable response were 762 (61%) (landowners had to have 10 acres or more of forest to be included, otherwise they were excluded).	•Mail survey •Focus groups (used to prepare the survey)	•Statistical: frequency tables, measures of central tendency
Schuster (‘78)	•Extensive	1,200 sampled (no categorisation of entire population) in the Western position of Montana. 40.9 % response rate. Only those owning 40 + acres of forest land were sampled. Industry ownerships appear to have also been incorporated into the research. Not much detail is given - no analysis of non-response.	•Mail survey	•Statistical: frequency tables
Sinclair (‘00)	•Extensive	Includes only landowners with at least 25 acres of forest in a eight town region (survey population was 587 strong with 300 in the sampling frame).	•Mail survey	•Statistical: frequency tables, Students t-test, Pearson’s rank coefficient

(Continued over page…)

Who did the research?	Research technique	Particulars of practice	Method: data collection/ selection	Method: of data analysis/ synthesis
Wilson ('92)	•Extensive	This research seems to be an effort to do a census. All landowners in the Catlin region were individually contacted (79% responded). Appears to have received 189 respondents.	•Personal survey questionnaire •Personal interview	•Statistical: frequency tables, chi-square tests of independence
Wilson ('95)	•Extensive	Based on 1994 ABARE survey (farm survey report 1995) - not reported here, likely to be robust and reliable survey. Population frame included agricultural operations of AUS$ 22,500+. Covers broadacre and dairy industries only. Around 2,000 farms surveyed.	•Secondary data – ABS Agricultural census	•Statistical: frequency tables
Young ('87)	•Extensive	Lists formed from USDA Crop Reporting Service and the Illinios Cooperative Extension Service databases, with landowners of one or more acres of forestland. Sample population was 1,748, of which 621 (36%) useable responses were received. Systematic and random selection of respondents. A pre-test was conducted to select which beliefs would be included.	•Telephone survey	•Statistical multiple regression, t-test

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Appendix 8b: Techniques in the literature II

	Form of analysis/synthesis				Time-frame		
	Ranking	Associational	Typological	Thematic	Diachronic	Synchronic	Unknown
Birch (‘98)	✓						✓
Blatner (‘89)	✓	✓				✓	
Blatner (‘91)	✓					✓	
Bliss (‘89)	✓			✓		✓	
Bliss (‘92)				✓		✓	
Bliss (‘97)	✓	✓				✓	
Bourke (‘94)	✓	✓	✓			✓	
Broderick (‘94)	✓					✓	
Brooks (‘86)	✓					✓	
Brunson (‘96)	✓					✓	
Dettman (‘00)	✓	✓				✓	
Egan (‘93)	✓	✓				✓	
Egan (‘95)	✓					✓	
Forestry (‘82)	✓	✓				✓	
Greene (‘86)	✓	✓				✓	
Jenkins (‘98)	✓				✓		
Kangas (‘96)	✓	✓				✓	
Karppinen (‘98)	✓	✓	✓			✓	
Kingsley (‘88)				✓		✓	
Kline (‘00)	✓	✓	✓			✓	
Kuhns (‘98)	✓					✓	
Kurtz (‘81)	✓	✓				✓	
Lönnstedt (‘97)				✓		✓	
Marty (‘88)	✓	✓	✓		✓		
Northern (‘99)	✓					✓	
O'Hara (‘91)	✓					✓	
Rickenbach (‘98)	✓					✓	
Schuster (‘78)	✓	✓				✓	
Sinclair (‘00)	✓	✓				✓	
Wilson (‘92)	✓	✓				✓	
Wilson (‘95)	✓					✓	
Young (‘87)	✓	✓				✓	
Totals	*29*	*16*	*4*	*4*	*2*	*29*	*1*
Grand total				***53***			***32***

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Appendix 9: Normative focus in the literature

	Ontological commitments						Epistemological commitments				Axiological commitments			
	Nature of reality		Nature of human experience		Human nature		Relation-ship between researcher/ researched		Type of knowledge generated		Terminal goals		Instrumental goals	
	Objectivism	Constructionism	Determinism	Narrative	Information	Meaning	Dualism	Fusion	Linear	Circular	Positivist	Interpretist	Foundational	Anti-foundational
Birch (‘98)(w)	✓		✓		✓		✓		✓		✓		✓	
Blatner (‘89)(w)	✓		✓		✓		✓		✓		✓		✓	
Blatner (‘91)(w)	✓		✓		✓		✓		✓		✓		✓	
Bliss (‘89)(w)	✓		✓			✓	✓	?	✓		?	✓	?	?
Bliss (‘92)(w)	✓	?	✓	?		✓	✓			✓	?	?	?	?
Bliss (‘97)(s)	✓		✓		✓		✓		✓		✓		✓	
Bourke (‘94)(w)	✓		✓		✓		✓		✓		✓		✓	
Broderick (‘94)(s)	✓		✓		✓		✓		✓		✓		✓	
Brooks (‘86)(w)	✓		✓		✓		✓		✓		✓		✓	
Brunson (‘96) (w)	✓		✓		✓		✓		✓		✓		✓	
Dettman (‘00) (w)	✓		✓		✓		✓		✓		✓		✓	
Egan (‘93)(w)	✓		✓		✓		✓		✓		✓	?	✓	?
Egan (‘95) (w)	✓		✓		✓		✓		✓		✓	?	✓	?
Forestry (‘82)(w)	✓		✓		✓		✓		✓		✓		✓	
Greene (‘86)(s)	✓		✓		✓		✓		✓		✓		✓	
Jenkins (‘98)(w)	?		?		?		?		✓	?	✓		✓	
Kangas (‘96)(w)	✓		✓		✓		✓		✓		✓		✓	
Karppinen (‘98)(w)	✓		✓		✓		✓		✓		✓		✓	
Kingsley (‘88)(w)	✓		✓		✓		✓	?	✓	?	✓	?	✓	?
Kline (‘00)(s)	✓		✓		✓		✓		✓		✓		✓	
Kuhns (‘98)(w)	✓		✓		✓		✓		✓		✓		✓	
Kurtz (‘81)(s)	✓		✓		✓		✓		✓		✓		✓	
Lönnstedt (‘97)(w)	✓		✓		✓		✓		✓			✓	✓	
Marty (‘88)(s)	✓		✓		✓		✓		✓		✓		✓	
Northern (‘99)(w)	✓		✓		✓		✓		✓		✓		✓	
O'Hara (‘91)(w)	✓		✓		✓		✓		✓		✓		✓	
Rickenbach (‘98)(w)	✓		✓		✓		✓		✓		✓		✓	
Schuster (‘78)(w)	✓		✓		✓		✓		✓		✓		✓	
Sinclair (‘00)(w)	✓		✓		✓		✓		✓	?	✓		✓	
Wilson (‘92)(w)	✓		✓		✓		✓		✓		✓		✓	
Wilson (‘95)(w)	✓		✓		✓		✓		✓		✓		✓	
Young (‘87)(s)	✓		✓		✓		✓		✓		✓		✓	

In Appendix 9, ticks (✓) and question marks (?) are used as shorthand for ‘weak’ (?) and ‘strong’ (✓), which is depicted in the assessments given in Table 3.14. Light shading in the first column highlights cases with markedly different scores.

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Appendix 10: Remnant-positivism in context

There are at least a dozen different types of positivism (Halfpenny 1982) and their histories are complex. Concentrating on an epistemological positivism, a general definition is that authoritative knowledge is based on sense-experience (Mautner 1996). More adequately:

> …statements produced in a scientific context were supposed to be reducible…to protocol or 'observation' statements, which in turn could be reduced to sense-data statements (Duran 1998: 15).

The link between an observational language and a theoretical language forms a deductive statement that is epistemologically privileged (*i.e.*, 'scientific' as generally understood) (Duran 1998).

As a model (or doctrine) of science, positivism played a powerful historical role in shaping understanding of science and of informing science. Positivism though had significant problems (Crotty 1998), largely developed through internal critique, that impelled some adherents towards realism or conventionalism. A contemporary critique survives in the debate over the covering law model which assumes universal (social) laws exist when contradictory evidence suggests otherwise (see Kincaid (1996) who argues for universal laws and Flyvbjerg (2001) for a case against). It no longer has a coherent centralised community that advances its program(s), largely dying out in the 1950s (Kincaid 1996). That said, the legacy of positivist thinking continues to be powerful most notably as an often un-stated set of rules and practices which echo aspects found in earlier positivism/s (Miller 1987).

Here the term, specific to this thesis, of 'remnant-positivism' is used to capture this influence (the word post-positivism has also been used for a differing dimension of this task, especially as associated with the work of Thomas Kuhn and Karl Popper). It is easier to describe this ideal type today through its practice rather than its philosophical program. This also steps closer to how an imagined researcher of private landowners might understand science and which is unhooked from the specifics of

what positivism is within philosophy (as partly outlined in the previous two paragraphs).

Fischer (1998), utilising the old name for logical empiricism of neo-positivism, gives an adequate summary. Neo-positivism is:

> [a] theory of knowledge put forth to explain the concepts and methods of the physical and natural sciences [usually] in pursuit of quantitatively replicable causal generalisations. [Research designs here] emphasize empirical research designs, the use of sampling techniques and data gathering procedures, the measurement of outcomes, and the development of causal models with predictive power… (Fischer 1998: 130).

Simplistically, what this means is that it is assumed there is one material reality, it is independent of perception, unchanging and exhibits regularity in the relationships amongst all its attendant parts. Epistemologically, we can directly know that reality through certain languaging (mathematics being one[1]), and it is possible to build cumulative knowledge through persistent inquiries by dividing, observing, and measuring. In this, social beings are largely deterministic and reactive, which is to say that they are a part of material reality and are motivated rationally in behaviour by structures that are part of that material reality (*e.g*., genes, neuro-physiological states, *etc*). It is not straight forward to establish the parameters necessary to know the singular, divisible, tangible and objectifiable reality. The rules to establish this knowing are strict and require a privileged point of observation. The most privileged of these points requires that certain divisible elements of reality (phenomena) be randomised and controlled for and that measurements be accurate, logically defensible and have validity as well as reliability. This is especially so as the regularity determined may be re-determined at a time-independent moment. Social order/beings can be so explained,

[1] A deductive-nomological (D-N) logic, which utilises the covering-law model, is involved with this process (Morrow and Brown 1994). Young and Reichenbach (1987) seem to suggest as much in their research objectives when they suggest a casual link between intention and behaviour. As their research unfolds though, it becomes clear that they appear to be utilising probabilistic or inductive-statistical (I-S) explanation. Consequently, determining if the theory 'seems to work' relies on the assumption that if the rules of probabilistic explanation have been met, *e.g*., if the results have validity and reliability, then the overall explanation is 'potentially probable' if there is strong correlation between variables within a 'good' causal story (Little: 5-6: 159-179). I-S explanations though do "...not establish the presence or character of a set of causal mechanisms connecting the variables" (Little 1991: 178).

both in action/behaviour and for predictive purposes, by illuminating the general, abstract, universal law/s which controls the patterned association of variables regarding some reduced/divisible phenomenon. If such rules can be shown to have been followed in research practice, by and large, then the account is acceptable as the researchers have clearly demonstrated that their descriptions correspond to reality, and at least temporarily the account will be treated as verified and privileged knowledge, sometimes called a scientific fact or similar. In practice, this means that it will be evident:

> [p]rocedures were structured a priori, dependent and independent variables were identified, hypotheses suggested by…theory were tested, statistical analyses were performed, and concern for reliability was expressed and identified as a priority (Hudson and Ozanne 1988: 514).

Practices that do not conform to these procedural rules cannot claim that the knowledge produced is either verified or privileged (and with remnant-positivism, these protocols have the most complicated forms). If they do so, then to varying degrees violations of the epistemological framework will have occurred and the results developed will be selectively downgraded in there usability regarding the assumed structure of reality. Serious violations render the piece of research unscientific or, at best, indicative only (Susman and Evered 1978; Hudson and Ozanne 1988; Morrow and Brown 1994; Gerring 2001).

There is also a particular strand within remnant-positivism, called abstract empiricism, a strand that reduces theory to methodology and then places that methodology to the front of the actual questions or problems which arise within the substantive research area. This was put by Mills (1959), although in a rather polemical form, who stated:

> …abstracted empiricism is not characterised by any substantive propositions of theories. It is not based on any new conception of the nature of society or of man or upon any particular facts about them…(65).

The problem amongst the thirty-two pieces of literature reviewed herein is not that a number are reflective of abstract empiricism but that nearly all are. What the dominance of this particular, a-theoretical, methodologically fixed approach does to the results accumulated over the years

is, as Mills (1959) notes; "…insuring that we do not learn too much about man and society" (p. 86).

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Appendix 11: Meta-theory – Anderson (1987)

Meta-theoretical framing of the *theory of reasoned action* within the cognitive program. Reproduced from Anderson (1987: 160).

Exemplars and commitments		Cognitive program
A. Exemplars and intellectual foundations	1. Specific exemplar	Fishbein and Ajzen (1975)
	2. Intellectual foundations	Cognitive psychology, social psychology/ Thurstone, Likurt, Guttman, Allport, Dulany
B. Programmatic commitments	3. Overriding cognitive aim	'Explanation' via subsumption of behaviour under universal laws: prediction and control
	4. Predominant mode of inference	Hypothetico-deductive
	5. Interpretation of ontology	Realist
	6. Sample ontology	Operants, stimulus, reinforcement, extinction
	7. Primary research methods/appraisal criteria	Production of predicted effects in experimentation: Correlation in ex post facto studies at the micro level: Consistency with ontology of cognitivism
	8. Concept of mind	Accessible to others via survey research: Actors have privileged access to their cognitive states
	9. Concept of human nature	Cognitive man: A rational information processor who forms beliefs, attitudes, and intentions that are casually determinant of his behaviour
	10. Sample proposition: specific exemplar	Behavioural intention is a function of the sum of the weighted attitude toward the behaviour and the social norm regarding the behaviour (Fishbein and Ajzen 1975, p: 301)
	11. Sample proposition: consumer behaviour exemplar	Belief modification rather than evaluation modification is the more promising strategy for attitude change (Lutz and Bettman 1977, p: 146[1])
	12. Ideological/value commitments/policy implications: specific exemplar	Individuals are free to seek and evaluate information that may lead to changes in their beliefs, attitudes, intentions and behaviour. Policies can be designed to affect both cognitive structure and behaviour through various forms of information dissemination.

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[1] As this reference has not been used by this author, it is listed here rather than in the bibliography: Lutz, R. and Bettman, R. (1977). Multiattribute models in marketing: A Bicentennial review. In Consumer and industrial buying behaviour, eds., A. Wood-side, J. Sheth and P. Bennett, North-Holland: New York.

Appendix 12: Worldviews – Reason (2001)

	Mainly about matter: Mechanistic		**Mainly about mind and spirit**		**Mind-matter integration**	
	Dualist	Materialist	Idealist	Social constructionist	Panpsychic	Participatory
Ontology	Mind and matter are real, but distinct entities, neither of which is reducible to the other.	All is matter. Mind is an emergent epiphenomenon, or nonexistent (materialism can be seen as a truncated dualism with mind lopped off).	All is ultimately pure consciousness or spirit. What we call the natural world is either an illusion or in the end reducible to mind.	Reality is a social construction mediated by language and shaped by social, political, cultural, economic, ethnic and gender values crystallised over time. "There is nothing outside the text".	Consciousness and matter arise together and are inseparable. Reality is self-organizing, emergent, complex, evolutionary, systemic.	Subjective-objective: human self both autonomous and embedded in participatory relationship with the given primordial reality, in which the mind/body actively participates.
Epistemology	Objectivist/realist: Findings 'true; meaning repeatable, verifiable, quantifiable. Knowledge accumulates over time, approaching 'Truth'.		Universal or Absolute Mind, knows all things directly. Lesser minds, know through participation in Absolute Mind.	Knowledge is transactional, subjectivist, politically determined. Deconstruction of grand narratives.	Knowing resides not only in human minds, but in a wider ecology of mind.	Knowing through active participation. We know our world as we act within it with critical subjectivity. Extended epistemology.
Methodology	Methodology of objectivity: separating subject and object: experimental, manipulative.		Intuition, revelation, mysticism, mindfulness disciplines, esoteric methodologies.	Various forms of dialogical, transactional, qualitative, linguistic inquiry. Inquiry recognised as partial, politically determined.	Sympathetic and compassionate inquiry, awareness of subtle sensitivities, holistic approaches.	Co-operative forms of action inquiry; community of inquiry within community of practice.
Axiology	Propositional knowledge about the world is an end in itself, intrinsically valuable. Knowledge is value free.		Primary values are those of spirit and mind: contemplation, unity, dissolution of ego, overcoming the illusion of a separate world.	Propositional, transactional knowledge is instrumentally valuable as a means to social emancipation.	Universal sympathy and compassion for all beings. All things have intrinsic value, right to existence and full self-realization. Ecological awareness. Cosmos as sanctuary.	Practical knowing how to foster human and ecological flourishing is the primary value, supported by propositional, experiential and other forms of knowing.
Major philosophical problem	If mind and matter are ontologically separate how can they interact at all?	How can subjective, conscious mind emerge from non sentient matter?	If all is consciousness or social construction, how do we account for the universal, pragmatic, common sense supposition of reality?		Fundamentally opposed to the dominant mechanistic (dualist or materialist) perspective, and as such appears both mystical and functionally irrelevant. Must struggle for acceptability. Distinguished philosophical lineage unacknowledged and unrecognised.	
Major contribution to affairs	Hugely powerful methodology for understanding and manipulating the macroscopic world. The danger is that as a worldview it brings about a disenchanted and dead world.		Draws attention to the contribution of consciousness, social relations power and politics, gender and race in constructing our world. Draws attention to the limits to our knowledge of the world. The danger is the "real" sensuous, embodied and more than human world disappears in a welter of social construction.		Provides for a re-enchantment of the world and an honouring of the rights of the more than human. Challenges us to discover a new form of knowing and methodologies which honour the integration of mind-matter and politics with epistemology. The dangers lie in the huge demands of such methods.	

"A representation of competing worldviews" (reproduced from Reason 2001).

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