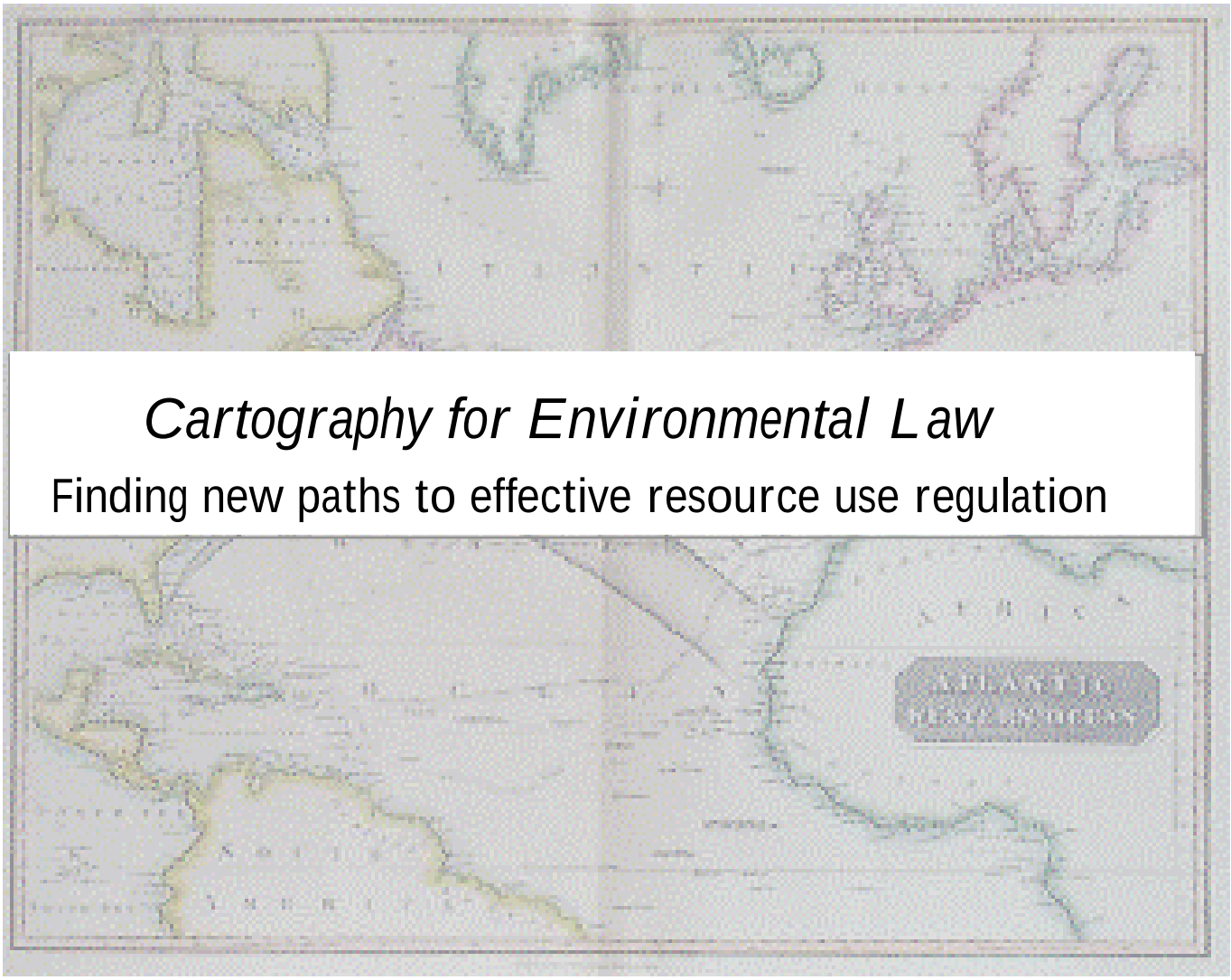

Cartography for Environmental Law

Finding new paths to effective resource use regulation

Paul Martin
Miriam Verbeek

Report: Methodology for NRM Law-in Context studies
(Project No. TPF1)
June 2000

Sustainability, strategy and society
PO Box 744
Sutherland NSW 1499

The aim of this paper

Objective: *To develop a framework for the conduct of cross-disciplinary studies that will lead to regulatory approaches which are effective in generating sustainability enhancing behaviours in natural resource management.*

The Land and Water Research and Development Corporation (LWRDC) have commissioned this project. The aim is to create a framework for social research which will lead to more effective regulation of natural resource use. Our approach is to treat legal regulation, and law in general, as only one of a range of mechanisms for regulation of behaviour. Other processes include market mechanisms (such as pricing), culture (such as believe systems and personal philosophy), and organisational systems (such as organisation structure).

Regulation
Mechanisms for the modification of behaviour and particularly control of self-interest to meet the interests of society

Law
Mechanisms for regulation of behaviour by means of legislation and the judicial system

This discussion paper derives propositions and questions issues derived from this holistic way of thinking and suggests them for further study.

Thinking differently

Unique insights often come from thinking differently. Our "thinking differently" about the law and natural resources management is to embed them into a model which includes the decision-making and behavioural processes of individuals, organisations and society. We treat law as part of that system, rather than as a distinct field, and we arrive at insights into how the law works in society, and how to construct law in ways that encourage behaviours consistent with societal expectation.

A naive view of law focuses on legal rules, seeing them as static and emanating from legal system structures – Parliament, the Courts, and the Bar. Whilst this is partially true, such a perspective is misleading in the longer term. Rules and structures are temporary reflections of sophisticated processes of acting out societal interests. They are some of the ways society seeks to shape the behaviour of its members, to create patterns of behaviour that meet broader objectives.

In other words, society invests organisations and individuals with resources, and seeks to have those resources used in ways that suit its requirements. Individuals carry out a parallel process, securing resources from the community and seeking to use them in ways that suit their preferences. Mediating these preferences are processes that regulate individual and organisational behaviours, with outcomes at two levels: decision making and action.

The immediate outcome, through which values, expectations, and signals (data) are combined, is in decision making, followed in some cases by action. Our major concern in this paper is action that deploys physical resources, impacting the physical world and ecological sustainability.

Structure

The document is structured in four parts.

The first part contains an overview and rationale to the discussion. The second part is an explanation of the model which sets the framework for understanding the role and operation of regulations. In this part we note a number of propositions which are derived from the model. We also derive a number of research questions, the answers to which should provide a sounder foundation for setting strategies for natural resource management.

In the third part of the report, we discuss the legal regulation of behaviour from a systems perspective, looking at temporal and structural perspectives. Once again we derive a number of proposition and set a number of research questions. The questions are focused on the function of regulation in natural resource management, but have as their basis the systems framework explained in Part 2.

The fourth part contains attachments referred to in the main body of the report.

Acknowledgement

We are grateful to those who assisted in the preparation of this report. Thanks to Rebecca Prince who gathered and sorted information regarding legislation and case studies. Thanks also to those people who commented on our first working draft. Attachment 2 provides a summary of those comments.

Executive summary

Around the 17th century, there was a blossoming of exploration spurred by competitive imperialism and increased knowledge of navigation out of sight of land. The search was for natural resources, and for power. Explorers (and conquerors) were the heroes of this age. But the heart of this blossoming were people who often never went to sea, never discovered continents, conquered proud peoples, nor brought home great wealth. They were the cartographers.

Maps provided the structure and the basis for adventuring.

Early maps were beautiful, but unreliable, documents with known territories detailed and less known territories illustrated by dragons, wild seas, hypothesised glories and dangers. It was only through a process of exploration (planned testing) and systematic recording of findings, that maps became increasingly precise.

As we enter the 21st century, the imperative is still the pursuit of resources and power. But one form of that imperative is sustainable use of what is already available. A means for attaining that sustainable use is through regulation of usage behaviour – the core of natural resource management.

Whilst we have done much exploration and pioneering work in this field of natural resource management, we have no comprehensive map and agreed-upon methodology to guide us and record what explorers find. This is especially the case for the territory which describes the collective response of people to different resource management strategies. We set out on voyages knowing vaguely what to expect, and we watch the next adventurer set out with little learnt from previous explorations.

This study is an attempt at mapmaking to help us manage the process of increasing sustainable natural resource use. We meld observation with behavioural theory, seeking to answer the question: "What is the behavioural terrain we are exploring?" The strategic objective of the study is increasing sustainable use of natural resources. Our tactical objective is to develop legal mechanisms that integrate and support other social mechanisms in achieving this objective.

The foundation of our map, providing us with consistent methodology and tools for integrated and consistent learning, is systems theory. Within this foundation, we describe subsystems of the major actors in the regulatory process: individuals, organisations and society. Our conceptualisations of individuals and organisations are based on well-established theories of human nature and organisational behaviour. We include the concept of society as the custodian of natural resources and embed these three subsystems (individuals, organisations and society) within a suprasystem, the environment.

Using this model, we explore the legal terrain, posing questions about how successful it has been, and can be, in guiding and directing human behaviour. We note that successful natural resource management requires fundamental changes to the standards and values of individuals, to the cultures and structures of organisations, and to resources allocation decisions by society. The capacity of legislation to carry out this complex task is limited. There are many issues regarding natural resource management which can be better dealt with through social processes, such as education, differential resource allocation and agreements. Legislation works best when there is strong support from the prevailing social

culture, through organisation structures, and when policy principles have a sound information base.

This study poses a number of research questions which could advance us towards establishing the foundations for better resource management. These research questions attempt to provide the basis for understanding the fundamentals for effective natural resource management, and the basis for promulgation of legislation that will effectively support such management.

We have provided a map of the behavioural terrain underlying resource management. Sadly our map does not have the aesthetic appeal of ancient maps, being bound in layers of complex concepts rather than appealing drawings. We do, however, provide a descriptive framework that can be tested, refined and built upon. The offer in this paper is for explorers from different disciplines to discover routes towards sustainability and feed the knowledge into a common understanding of the terrain over which all explorers who follow will have to travel.

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Attachments

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BOXES

Part 1

Overview and Research Program

Part 1 discusses the rationale for the approach we have taken to this project and lists severa agenda items for future research

Research Program

Issue 1: *Develop a heuristic model for natural resource legislation*

Issue 2: *Determine the behavioural imperatives underlying the success of regulations*

Issue 3: *Understand the nature of time lags inherent in the effective functioning of regulations*

1.1 Introduction

The need for effective natural resource management regulation has never been greater. Many sectors of society, including environment groups, consumer groups, welfare groups, farmers groups, scientists, as well as international agencies, emphasise the necessity of taking meaningful and urgent action to safeguard the environment.

Safeguarding the environment requires a fundamental shift in the way a majority of Australians interact with natural resources. Traditionally we, in Australia, have had a relatively exploitative ethic towards the environment. Australian laws perpetuate this ethic by centring the rights to property and of individuals, and supporting these rights by massive subsidies for the exploitation of natural resources[1]. The past few decades have seen several legislative efforts to reign in natural resource exploitation with the passing of laws such as Environment Protection Acts at Federal and State levels, and various anti-pollution laws. The effect of these regulations has been lacklustre. The 1996 State of the Environment Report (State of the Environment Advisory Council, 1996, pES-8) noted that:

> Figures bandied around for the dollar costs of monitoring and reparation of land are in the multi trillions of dollars annually. In Europe there are now estimates of the annual remedial costs of agricultural land, which more or less match profit margins. In Australia, where profit margins are considerably lower, and the land more vulnerable, the imbalance is much greater. There is a very serious process of change afoot which threatens human health, economy and is in evident conflict with principles of inter-generational equity.
>
> Source: Interview with David Paterson, University of Sydney.

- Destruction of habitat, a major cause of decreasing biodiveristy loss, is continuing at an alarming rate;
- Water quality around cities continues to deteriorate;
- Inland waters are in poor shape with frequent algal blooms;
- The hole in the ozone layer continues to grow;
- Soil erosion from agricultural land remains a problem;
- Some aspects of the environment experienced by indigenous Australian remain poor;
- Old growth forests continue to be logged.

The apparent indifferent results of legislation protecting the environment point to the fact that legislation in itself is not sufficient to cause societal change. Legislation and accompanying regulations are only one of the mechanisms used by society to manage relationships between individuals, organisations and the environment. Legislation is, arguably, one of the weakest means of managing such relationships. As we shall argue in more detail in Part 3, legislation and the accompanying legal system constantly negotiate competing social requirements for flexibility and certainty. A more powerful means for social regulation exists when prevailing social norms embody certain modes of behaving, and when societal structures support such belief systems. Laws protecting personal property are examples of successful laws. They

[1] A report produced for DEST (1997) estimates that total financial and environmental subsidies to the use of natural resources in Australia are in the order of $13.7-14.8 billion a year, or 3.2-3.5% of GDP. $6 billion is in direct financial subsidies and $7 billion is in the form of environmental subsidies.

are widely understood, widely accepted and intrinsic to the way people interact with one-another. Such laws set the bottom line, but most interactions are simply conducted on the basis of a common understanding of the rights and limits to the rights of the individual. Such laws are the final arbitrator in disputes. They also form another important function by setting the scene for transactions. We shall discuss this in more detail in Part 3.

Laws protecting the environment are relatively new to our culture. While many people understand the need and even the urgency of such laws, there is little supporting and shared belief system to assist their implementation. How to embed these characteristics, to simultaneously have regulation achieve behavioural change and sound management practices, is the challenge to which this report addresses itself.

Three research issues require priority research attention:

- Developing a heuristic model for natural resource legislation;
- Determining the behavioural imperatives that underlie the success of regulations; and
- Understanding the nature of time lags inherent in the effective functioning of regulations.

We were assisted in the identification of these issues by respondents to a working draft of this report. These issues are also those we found the most compelling from our own research into environmental law and natural resource management,

These issues are brought into focus by the systems model which we develop in this report. Our aim has been to develop an integrative perspective, to sharpen the focus on law as a behavioural management tool. Our discussion and understanding of issues 2 and 3 rely upon insights from the model we outline under issue 1. There may be other interpretations, from other theoretical insights, to explain why issues 2 and 3 should have research priority. The challenge is to develop a coherent understanding which will promote effective natural regulation.

1.2 Issue 1: A heuristic model for natural resource legislation

In interviews with people drawn from a range of disciplines, many factors were suggested as crucial to implementation of effective regulation and potential areas for research, including:

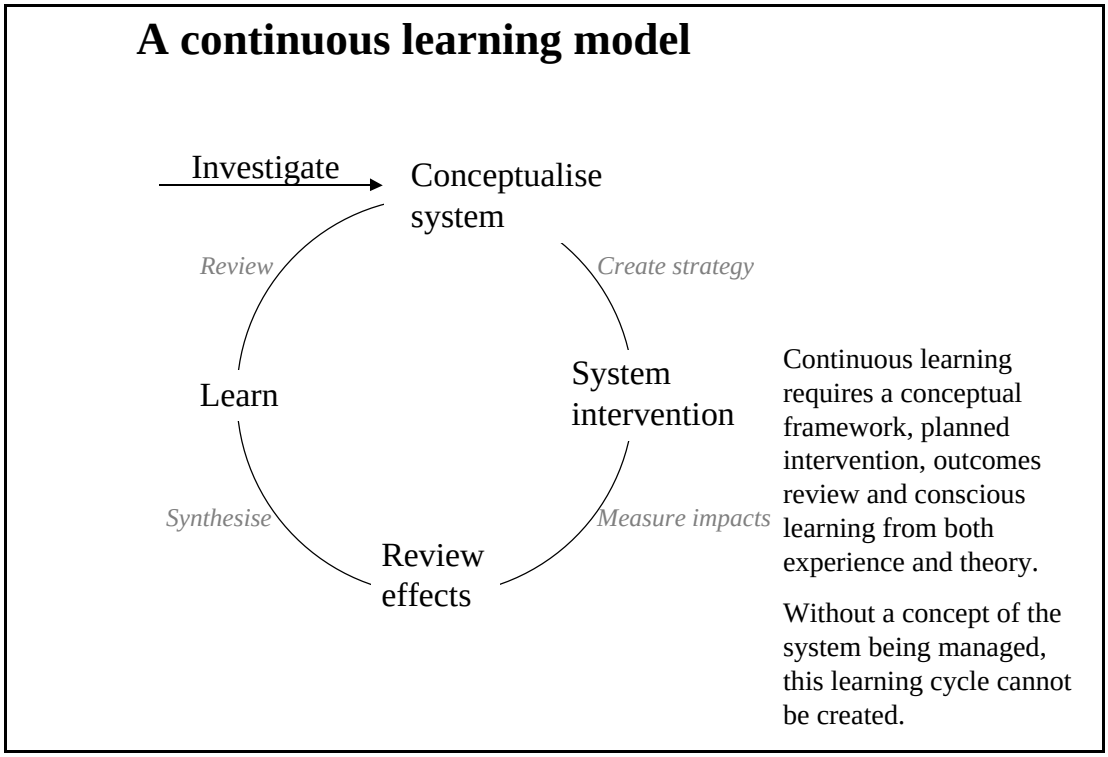
- Greater resourcing for implementation of regulations;
- Better education strategies;
- Better understanding of power structures within society effected by regulations;
- Better understanding of the temporal requirements for implementation;
- Greater requirement for penalties for non-compliance;
- Need to understand the diversity of requirements of those being regulated;
- Need to understand different types of laws and what they seek to do and how they seek to do them.

Many suggestions came from those who were frustrated by the requirements of natural resource regulations or by the apparent impotency of regulations to effect

behaviour. With few exceptions, suggestions about creating effective regulations have not embodied a holistic view of how and why legislation effects behaviour. Without such knowledge, it is difficult to rationally[2] examine why regulations do or do not work.

The lack of a holistic approach may also explain the apparent method nature of natural resource management. Concepts are developed, researched and sometimes implemented as distinct episodes rather than as part of a well-structured evolutionary program. The problem with this methodology is that episodes are not linked in ways that accumulate learning. Feedback into a knowledge base is haphazard. Individuals and institutions are often doing good work, but there is no integrative framework that maximises the value of their work.

Figure 1.1 – Systems based improvement



In order to apply a continuous improvement approach to macro-level policy (rather than micro-level sub-tasks) it is essential to have a way or thinking – a model – of what is being managed. Without such conceptualisation it is not possible to discern where energy or resources are being wasted, or where redirection of resources might significantly alter outcomes.

In the case of legal regulation generally, and natural resource management specifically, no heuristic model has been proposed, let alone accepted, as a basis for predicting behavioural outcomes from different interventions, and combinations of interventions. Institutions or individuals may have such a concept in their heads, or buried within working papers. Some natural resource management initiatives reflect awareness of a wide range of elements that have to be managed, but express this understanding only in a collection of loosely connected interventions. Conceptualisation behind interventions is not overt. It is not shared across agencies

[2] We take the word "rationally" to refer to scientific enquiry, where a problem is posed, hypotheses are advanced within the framework of a theory, then tested.

that are pursuing (in the broadest sense) the same agenda. The result of this is barriers to learning and refinement. This is akin to not having a shared language – individuals may know a lot, but unless there is a basis for narrative they cannot collectively pool and refine that knowledge.

The second feature of this lack of specification is that opportunities to accelerate understanding of what strategies work, and particularly why they might work, are being lost. For example, when one program deals with economic incentives, another deals with improving information flows, and a third is focused on regulatory enforcement, it is very easy to believe that they are focused on different aspects with tenuous links. The model we discuss in Part 2 shows that this is not the case. There are rich interactions and, reflecting equifinality, all interventions interrelate.

In Part 2 of this report we outline a model which might fill the heuristic gap. We chose systems dynamics as its foundation to reduce constraints that might otherwise be imposed by disciplinary boundaries. Our objective is to provide a model that identifies fundamental factors and integrations, but allows sufficient flexibility for researchers from all fields to contribute from their unique perspective.

We had two criteria in developing our model:

- The model should be well-grounded. That is, it should draw on knowledge and research which already exists. Such an approach enables targeted inquiry into problems launched from an established and accepted knowledge base.
- The theory should be intuitive but multifaceted. If theories are proposed, especially about human behaviour, which are counter intuitive, the likelihood is rejection of propositions. A theory is likely to be more powerful if an explanation draws an understanding response. The theory has added power when deeper enquiry reveals progressive layers of integrated and coherent explanations.

Navigation for travellers in times past – especially over the sea – was carried out predominantly with reference to stars and, later, compass bearings. Accurate maps (in the form of either mental pictures or drawings on parchment) of the night sky were fundamental to their capacity to move around the world. Star maps were a first layer of maps. How stars moved and their relationship to one another temporarily and spatially had a long and detailed research history and was taken as fact by cartographers and explorers. These star maps are an example of well-grounded theory. With a trust in such maps, explorers could venture forth to prescribed destinations – if that was their want – knowing they could return to their point of departure.

With a trust in such maps and integrated, supporting technologies for measurement, cartographers and explorers could estimate distances between landmasses, draw maps of coastlines and topography, and generally increase detailed knowledge of the Earth's surface. It mattered little that subsequent scientific enquiries gave rise to numerous theories about the evolution and substance of stars, or even that through space and time, the position of stars is not stable, or that current technology enables different kinds of maps. Star maps for early explorers were functionally relevant and enabled consistent and reliable progress in building knowledge about Earth.

Maps of the Earth can be shown in layers of detail, from a world view of landmasses, to the minutiae of housing blocks in towns, and even more detailed mapping of soils or biota and the like. People, researchers, choose the level of map detail to suit their particular inquiry, trusting the integrity of the supporting framework and technology. Good theory is like good maps. It provides the foundation for enquiry,

layering the detail to suit the enquiry, helping to stimulate and direct it, providing it with perspective and enabling interpretation[3].

Mindful of the criteria for good theory, we were guided, in our model building exercise, described in Part 2, by a further set of factors:

- Legislation, regulations, the law in general is about controlling and managing human behaviour at both the individual and social level. Our model explicitly recognises this by having a strong human behaviour focus.
- The law, in its formulation, recognises two entities: individuals and organisations (corporations being a special case). Our model makes these two entities explicit and utilises mainstream theory to explain their operation. In this way, we provide the necessary ingredient of layers of complexity in the model.
- Natural resource management is about interactions of humans with their environment. Our model embodies this relationship by using systems theory as its framework. It recognises society as the custodian of the environment on which individuals and organisations need to draw resources. Although society is recognised as an entity in the model, we are aware that, unlike individuals and organisations, there is no theory of society as such. Society is a conglomorate from which sociologists describe and study certain threads.
- The model should be normative rather than purely descriptive. It should enable users to design strategies to encourage behavioural change. To this end we make explicit the role of information, belief systems and resources, all three factors capable of being manipulated.

The model we describe makes many assumptions – as does any theory. We have made a number of these explicit in the form of propositions which can in themselves form research projects. Our major focus in developing the model, however, is to reveal areas where our knowledge of the interaction between law and behaviour in relation to law is lacking. In other words, what we are seeking to do is to develop a heuristic for understanding how to make laws effective in relation to natural resource management.

Other heuristics than the one we have developed may combine other insights from different disciplines into an integrated and predictive model. Our primary objective in describing our model is not to provide the definitive answer but to demonstrate the need for and the functionality of a more holistic theory for effective development of legislation.

Part of the research agenda we recommend is this report is to develop that holistic theory. Its development will have profound implication for the effectiveness of not only regulations aimed at natural resource management but also public policy in general.

1.3 Issue 2: Behavioural imperatives underlying regulations

How can laws be promulgated in the first instance to facilitate the process of sustainable resource use? We already identified in the above section that interviewees and our other research suggest a number of different answers to this

[3] Of course these same strengths of theory are its weaknesses. When used unquestioningly, theory can constrict and restrict learning.

question. Education, and resource allocations, including resource allocations to ensure compliance with natural resource law were key factors in the responses we received.

On the basis of these responses we recommend that the following questions guide a research agenda:

- How can effectiveness of the type of law promulgated be increased? There is a range of data to support a shift from punitive to incentive approaches, and from regulatory to market structures. Beyond these superficial and contested observations, there is little literature about how new laws can be promulgated to work.
- How can we make communication of the principles of the law more effective? Legal studies and studies in communication have highlighted the ineffectiveness of traditional communicative media in achieving awareness of the content and aims of legal instruments. There have been experiments but no systematic analysis of results from these experiments.
- How can we make community education on natural resource management legal issues more effective? Once again there is an ample body of source knowledge about community education. However this knowledge has not been focused on the particular issue of natural resource management regulation.
- How can we make resource allocation more effective and more meaningful? At the heart of the effectiveness of any legal instrument is its resource impact. This is both in terms of allocation by the targeted communities, and by the authorities charged with its implementation. In NRM law in particular, issues of feasibility are critical to the law being made meaningful. There is ample examples of laws being formulated where it is clear that there will be insufficient enforcement resource or commitment dedicated to implementation. The result is compliance only by those for whom the values embodied in the law align with values within the person or organisation affected. There is an urgent need to re-appraise regulatory design and implementation, to find new ways of ensuring that resource allocation and the intent of regulation are linked.
- How can we improve the rate of internationalisation by individuals and organisations of the principles underlying natural resource regulations. This issue embeds variables such as need for better understanding of information filters, beliefs and values, decision making frameworks, and resource constraints.

These questions are asked outside the framework of an explicit holistic model we recommend should be developed under the heading Issue 1. They are important questions that should be answered regardless of the heuristic guiding the enquiry.

From within the perspective of the model we develop in Part 2, encouraging people to use natural resources more carefully is not an economic or an environmental problem. It is a behavioural problem, requiring sets of decisions and actions by individuals which, as a consequence, either increase or decrease environmental health, economy and social equity. Effective regulations, therefore, must recognise the multifaceted nature of changing human behaviour, and must recognise existing societal structures and norms for behaving and how these are challenged by the regulation. The emphasis of natural resource management, therefore, should not be on material flows, nor on flows of wealth. It should be on the creation of patterns of behaviour that result in more benign flows of materials.

From a systems perspective, it is possible to identify many elements and linkages that describe human behaviour towards natural resources. The systems principle of

equifinality highlights that there are many possible outcomes from such a complex system. To derive a strategy for creating effective natural resource legislation, we need to identify the determining set of systems elements.

Our conclusion, derived from analysis through the perspective of the model described in Part 2, is that law per se does little to create desired behaviours. Rather, law acts in concert with three elements: availability of information, resource allocations, and belief systems, to bring about desired behaviours. When law does not trigger complementary programs within the elements, it will not be effective. This proposition is illustrated in Figure 1.2.

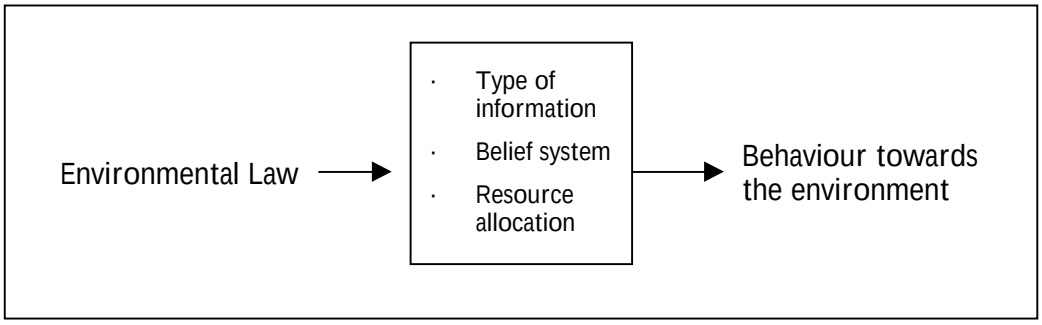


Figure 1.2: Variables mediating the effectiveness of environmental law

From this perspective, effective natural resource law should be based on responses to a number of fundamental questions. Each question, or set of questions, targets the behavioural determinants of individuals and organisations. Rather than detailing the questions at this point, we pose them in boxes 2.2 (page 28) and 2.3 (page 32) in Part 2, in the context of the theoretical discussion from which they derive. The role of communication, education, effective implementation, resourcing, incentives and issues of internalisation noted in the research questions above, can be answered from within the framework of the model and will be informed by outcomes from inquiries into behaviour determinates.

We take that step towards normative enquiry in Part 3, highligting issues in Box 3.1 (page 62), based on an analysis of the role and operation of natural resource law. We again call for more study on the contextual nature of natural resource law and we call for research:

- To obtain a better understanding of the practical implications of principals of natural resource law, such as sustainability and the precautionary principle;
- To ensure social equity issues are adequately dealt with in the promulgation of natural resource law; and
- To examine the effectiveness of laws that are increasingly shifting from punitive to incentive approaches, and from regulatory to market structures.

1.4 Issue 3: Temporality

A number of those we consulted in the process of writing this paper stressed that a major problem with the effectiveness of natural resource regulations is its long lead time. As the pace of change and the impact of deterioration in natural resources become more immediate there is a need to reduce these temporal effects. Reducing time delays involves a range of factors. These include:

- problem identification and communication to the political and judicial system;

- processes of formulation of law;
- more effective communications and implementation; and
- timely feedback and refinement of legal instruments.

Implementation of the research agenda we propose will help in this process, providing a more systematic method of assessing the needs of regulations. In particular, the method we propose will make explicit – and therefore hopefully encourage appropriate strategies – for dealing with a further factor which adds to the implementation lag of laws: change in the belief systems of people and organisations that will ultimately make natural resource laws effective.

Achieving alignment of natural resource law principles and belief systems takes time, requiring consistent messages, and changes in societal structures – many embodied in organisations which are the major vehicles used by society to utilise environmental resources.

1.5 The way forward

We have presented here, categories of issues that have been identified through interviews and research. We have recommended that these issues should be primary topics for further study to enhance the effectiveness of natural resource regulations. We have taken a further step and proposed a model which provides insight into the nature of the inquiry which should be undertaken.

The research agenda proposed in the three parts of this report has a strong behavioural orientation. We understand that such an orientation is not one that would sit comfortably with all researchers. Our goal in this report is not to entrench our proposed model on researchers who might wish to become involved in the enquiry towards increased natural resource effectiveness. Our goals are:

- To encourage researchers to take a holistic view of natural resource management, recognising law as a complex system, regardless of how that system might be defined.
- To demonstrate the utility of such an approach to research by describing a holistic model and deriving from it a set of research questions which would potentially increase understanding of effective resource legislation.
- For those researchers comfortable with the model we propose, to define a set of questions they could use as a basis for their research and to base these questions in theories which provide practical guidelines for formulation of strategies which will increase the effectiveness of natural resource regulations.

Part 2

Mapping the social system: thinking holistically

There is nothing so practical as a good theory

Part 2 proposes a behavioural model for understanding decisions making and action on natural resource use.

The model provides the basis for formulating strategies for changing such decision making and action.

Propositions derived in Part 1

Proposition 1: *To achieve sustainable natural resource management, interactions between the three subsystems: individual, organisation and society, must be appropriately integrated*.

Proposition 2: *Three flows: resource flows, information flows and belief systems, span and bind the individual, organisation and society subsystems.*

Proposition 3: *The ongoing need of subsystems within the social system for resources from one another sets the limits of their exploitation of one another and of the environment., and is a determinant of behaviour within the system.*

Proposition 4: *Information is used by subsystems to make decisions required to ensure fit with the needs of other subsystems and the environment.*

Proposition 5: *Beliefs provide meaning to information flows which are then used to determine resource use by subsystems.*

Proposition 6: *The most powerful strategies for encouraging sustainable natural resource management are those that condition access to resources.*

2.1 Introduction

In this section we propose a model for understanding natural resource use decisions and their implementation. The model uses systems theory as a framework and builds into the framework links and observations to describe natural resource decision-making and use.

Systems theory is often used for thinking through complex problems in physical and behavioural sciences. Biological sciences use systems modelling to explain the operation of living things. Ecology utilises systems concepts to explain the relationships between organisms and the environment. Business innovators use systems analysis techniques to make gains in the enterprise. For business, systems thinking has led to such innovations as franchising, Just in Time (JIT) systems, Total Quality Management (TQM), Computer Integrated Manufacturing (CIM), etc. Concepts of memetics (Blackmore, 1999) and social systems (Luhmann, 1984) are proving to be useful ways of conceptualising how societies work.

In this paper we use systems thinking to understand the context in which law operates – particularly law regarding natural resources. Using systems theory, we are able to derive insights into how law might be better used to achieve desirable societal ends.

We make a number of propositions from the model explicit, noting them as possible research areas to stimulate discussion and model refinement.

For many, systems thinking and related concepts and terminology are new. As with any theory, the concepts and the terminology that describes the theory are central to its effective use. Our starting point, therefore, is to explain those aspects of systems theory we will be utilising. Those who are familiar with systems theory can pass over section 2.2 directly to 2.3.

2.2 Systems thinking

A "system" is a model, a conceptualisation, of something: a telephone system, an organisation system, a cellular system, a solar system, etc. For something to be defined as a system it must contain at least two related elements, and all elements must be connected. It is not possible to decompose systems elements into unrelated subsystems (Ackoff, 1994). When we describe a system we identify its elements and the interactions of elements.

system defined

The operation of a system is more than the sum of its parts. Systems have synergy. Even if we understand every element in a system, we would not necessarily understand that system. For example, understanding how neurones fire, blood flows, function of grey matter, white matter, glands, frontal lobes, left hemisphere and right hemisphere and the like, can not explain thought. Thought is an integration of all these elements (and many others). We can only understand such systems by looking at the whole and understanding the interactions between the elements that make up the whole.

synergy

Systems can be either abstract systems - for example decision making systems, behavioural systems, or concrete systems - for example molecular systems, telephone systems. In turn, the components of a system can be either concrete or abstract. In the physical sciences,

concrete and abstract systems and elements

many elements are concrete. We can feel, see, or touch them – even if we need aids, such as microscopes, to do so. In the social sciences, many elements are abstract (e.g. Feedback and behaviour).

An abstract system is made up of only abstract elements. Psychological concepts such as id and ego are examples. Concrete systems are made up of concrete elements or objects (e.g. roads, wires, tree canopy), or a combination of abstract and concrete elements. Examples of concrete systems are organisations (which are a combination of abstract concepts and concrete elements) and an electricity grid (which is a combination of concrete elements). An economy is another example of a concrete system. We describe the elements that make up an economy as a series of transactions, interactions and activities. Some of the elements in the economy are concrete, such as money, but the *value* of money is an abstract element.

We could say that everything interacts with everything else, and each element within a system is a system in itself. Since the building blocks of all things in nature are energy and matter, this must inevitably be the case, at least for concrete systems. This integrative nature of all things may be an interesting observation, but the complexity of attempting to deal with an infinite number of interactions would not enable meaningful conclusions or interventions.

To deal with this problem we draw boundaries around the phenomenon we are trying to understand. We decide what elements and interactions we will include. We set limits on the complexity of the system we want to study. For example, a biologist might want to study an individual cell. She may elect to define the cell system as interactions confined by the cell membrane. She may acknowledge that the membrane is permeable and there are many transactions that occur across that membrane which explain cell's construction. However, her study purpose may not involve those interactions at this time. Should she decide to include the organ within which the cell resides, the perspective on the cell itself will change. The cell system, in fact, becomes a subsystem of the organ with significance only for its interactions with the whole.

boundaries

In our daily lives, we set boundaries to aid our understanding. We talk about the "community in a suburb", "the transport network", the "family unit", a "university", the "legal system". To understand these systems requires us to make arbitrary choices about boundaries and choices about the range and depth of their elements. Boundaries may also be physical such as those nature provides when we study a flower or an estuary, but even these are somewhat arbitrary. After all, why define the system as being one flower, when cross pollination means that we are concerned equally with a population of plants; or why define an estuary as a distinct eco-system when it is inextricably linked to the ocean system and the land system? The answer lies in the need to reduce complexity to enable understanding and, often, manipulation.

Systems can simply exist without purpose, or they can be purposeful. A purposeful system selects a course of action with respect to a criterion or objective. An organisation is a purposeful system because it exists to achieve some purpose/goal. The goal of a purposeful system need not be the expected outcome under present conditions. It may exist to achieve its purpose when conditions change – changes that may come in part by the operation of the system (Ackoff & Emery, 1972).

purposeful systems

A purposeful systems is, therefore, "open" – influenced by and influencing its environment[4]. Open systems have inputs and outputs. They continually import resources and export products and services. Organisations, for example, are open systems. They use people, and their inventions, materials, information and energy to make products and provide services. They export these products and services as well as their waste. The behaviour of the organisation is in part shaped by its need to do whatever is necessary to obtain access to the resources it requires to maintain its purpose. Closed systems have no inputs and outputs and ultimately fall into chaos, run down – suffer entropy[5].

open and closed system

Purposeful systems, at least complex ones such at the system we discuss in this paper, have many course of action open to them. Complex systems consist of many interconnected elements, with multiple paths between them and dynamics impacting their behaviour. There is, therefore, a myriad of possible ways for the system to reach its purpose, and hence, many equally legitimate strategies to pursue to reach the purpose. Von Bertalanffy (1968) called this characteristic of purposeful systems "equifinality. The capacity to reach a goal by any of a number of ways means that purposeful systems can be responsive, not simply reactive, entities. Equifinality coupled with "memory" means a responsive system can learn and adapt as circumstances change.

equifinality

Using these basic systems concepts, we will now discuss our conceptualisation of the behavioural system for decision making and action regarding natural resource use. The system we describe is deliberately apparently simple in structure, but it relies heavily of a wealth of research in each of the disciplines we integrate to draw us to the conclusions we make. Research using the model, therefore, has the benefit of that research to examine each part more thoroughly.

2.3 Effecting behaviour in social systems

The system we are interested in is a social system. It describes the way natural resources are used by people. Our purpose in describing the system is to help clarify our understanding of natural resource management to help us determine best points of systems intervention[6]. In particular, we are interested to identify the place law has in the system and the extent to which law can be used to effect natural resource management.

As illustrated in Figure 2.1, the system comprises three linked subsystems[7]: individuals, organisations and society, nested within the environment.

- The "individual" subsystem . Individuals are the actors that drive organisations and society to behave in the way they do. They are decision-makers in their own right, with a direct role in natural resource use and management.

[4] The environment being anything that is outside the system.

[5] In systems theory jargon, open systems attempt to reach a state of homeostasis, where inputs equal outputs.

[6] This model is equally applicable to other management/strategy problems. We have applied this model to developing strategies for introducing organisational responsibility programs and considering incentives for waste minimisation.

[7] In defining a unit within a system as a subsystem, we are extending our boundary for inquiry into the nature of that unit while not losing sight of the idea that the unit is part of a "super" system.

- The "organisation" subsystem . Organisations are the mechanism people use to produce outcomes that individuals cannot produce. Organisations use structuring mechanisms to achieve goals. Structuring mechanisms adjust information and/or resource flows. They also have determine the behaviour of the organisation. The influence of structure is, of course, not one-way. People set up the structures that effect other people and modify them to effect people differently. Effects and counter-effects (the change process) have time lags. Often we can assume, for analysis purposes, that the effects of structures are stable[8].

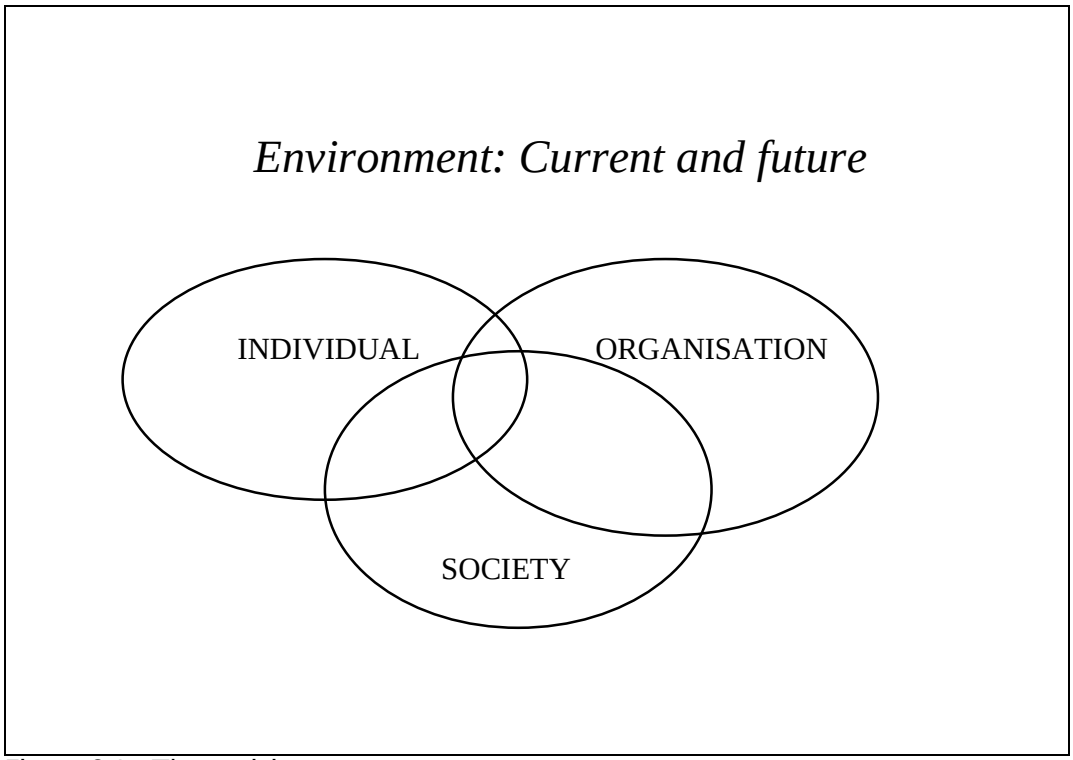


Figure 2.1: The social system.

- The "society" within which the organisation and individuals operate . The concept of society is different from those of individuals and organisations, being more difficult to draw boundaries around. Arguably, society itself is a system of which individuals and organisations are subsets[9]. However we are predominantly interested in identifying the elements that explain the structuring of relationships people have with one another, the norms that are expected of behaviour and the mechanisms that are used to regulate behaviour. Treating society as a subsystem interacting with both individuals and organisations facilitates this understanding.

[8] By "stable" we mean enduring for study purposes – making it possible to predict causative effect of one factor on another.

[9] For the most part, we accept Giddens (1997) definition of society in this paper: Society is a group of people who live in a particular territory, are subject to a common system of political authority, and are aware of having a distinct identify from other groups around them There may be times when we depart from the constriction of this definition. With such a world-embracing issue and natural resource management, there are times when we may wish to broaden our conceptualisation to a world community.

- The environment in which society, individuals and organisations operate . The environment is all encompassing. Environment includes concrete elements such as air and water, raw materials, natural systems, even the space beyond our stratosphere. It also encompasses abstract elements, such as the universe of ideas, including the concept of "future". This final concept is important in considering natural resource management, for it is the expectation of future scarcities and future impacts that drives concern for resource preservation.

The hub of the three subsystems is the focus of our interest.

> Proposition 1: *To achieve sustainable natural resource management, interactions between the three subsystems: individual, organisation and society, must be appropriately integrated*.

In linking the subsystems, we are, in effect, hypothesising that the inputs and outputs of the subsystems influence one another as well as the larger system, the environment. A second proposition we use in developing our framework is that we can order these inputs and outputs into three categories, or flows: resources, information and beliefs. These flows span and bind individuals, organisations and society, linking the three subsystems.

> Proposition 2: *Three flows: resource flows, information flows and belief systems, span and bind the individual, organisation and society subsystems.*

· Resources : All open systems require input of energies[10] (resources) to counter balance exports (outputs). The need to constantly access resources is a prime disciplining mechanism for the operation of subsystems. Each subsystem relies on other subsystems and on the environment for its resources. In an ideal state, the goals of each subsystem, and performance relative to those goals, therefore, must represent a gain for other subsystems for all to continue to receive resources.

In the case of organisations, for example, individuals who control input flows or resources to the organisation include those who use its outputs – e.g. customers, voters, stakeholders or members. The organisation uses its structure to access and manage resource and information flows. Its structure shapes its effectiveness in demonstrating to those who control resource flows that it is satisfying their wants and needs. Satisfaction increases chances that resources needed by the organisation in the control of others will continue to be provided. The pursuit of resources by organisations acts as a constant pressure on the organisation to fit within its context, at least to the extent of ensuring that it is able to continue to secure its required resources and information inputs.

Resources flow across the subsystems. Because the flow of 'energies' is critical to the continuance of any open system, resource flows have both an information function and a meaning function in decision making.

The same analysis can be carried out for each of the subsystems: individuals, society and organisations.

The physical environment exerts apparently passive pressure on the subsystems to ensure fit. In Australia, resource acquisitions from the environment is most often controlled through social mechanisms. Society is the custodian of the environment through government laws and regulations – and, where society sees these failing, direct action (such as boycotts, strikes and demonstrations). Of

[10] We define energies here broadly to encompass raw materials, ideas, power, etc.

course, the environment can exert its own limiting action by running out of a resource, or by changing circumstances to make the resource more precious – for example changing climate[11] .

Proposition 3: *The ongoing need of subsystems within the social system for resources from one another sets the limits of their exploitation of one another and of the environment., and is a determinant of behaviour within the system.*

- Information is used by each of the subsystems to make decisions required to ensure fit with other subsystems and the environment. Without flows of information from outside the system – or subsystem – the system must rely on its own internal information (knowledge) to make decisions. Such a circumstance increases the risk that the subsystem will drift out of fit with its context. That is, its requirements for survival will not properly account for available inputs and outputs.

Regardless, however, of whether the system seeks and is able to use information, it constantly receives signals from the outside world, and it is itself sending signals to other systems. These information flows might be unheeded or confusing, but they are nonetheless information. Well-functioning systems have social and physical structures built into them which capture relevant information and use that information to maximise chances of utilising resources to achieve their systems goals.

Information is of two types. First there is data – the signals that flow within the system. Second there are data structures – the ways in which data are structured to allow its interpretation. Learning comes in two forms – learning facts (data) or learning structures (analytic processes).

Proposition 4: *Information is used by subsystems to make decisions required to ensure fit with the needs of other subsystems and the environment.*

Information does not in itself have meaning. A process of perception or interpretation occurs between information and meaning, and this process is in substantial part attributable to pre-existing beliefs.

- Belief systems determine what individuals, organisations and societies find important, the sorts of resources they will pursue, the interpretation or meaning they will attribute to information received and used. Beliefs are embedded in the culture of society and organisations, and in the values held by individuals. Culture and beliefs are at the heart of how social subsystems[12] behave. They are a melding of fundamental societal philosophies, formed from historical experiences, interpretations of experiences, technologies, and knowledge about likely behavioural consequences. Ultimately, they

There are contradictory ways of dealing with the mechanisms of transfer of meaning between individuals and organisations in the literature. The developing field of memetics treats meaning as being intrinsically transferred between individuals and organisations. Other social commentators treat meaning as non-transferable in itself (though information coupled with prior meaning frameworks generates new meanings).

[11] Reflecting the Gaia concept, but our definition of environment is broader still, including all those elements and interactions outside the boundary of the three subsystems: society, individuals, organisation.

[12] For shorthand, we classify systems that describe people in all aspects as social subsystems. The individual, organisation and society subsystems we describe in this paper are, therefore, social subsystems.

determine the likelihood people, organisations and society will react appropriately to information signals from other subsystems and the environment.

Beliefs are largely generated within the society which holds them. They may be triggered by information, and shaped by responses to the readiness with which resources flow, but they are internal in their very nature. Systems of meaning are, according to Luhmann (1984) "autopoeitic" – self-referencing and self-generating.

This is important for our consideration of the three subsystems with which we are concerned. Whilst it might be possible to track a number of the ingredients that go to trigger the development of culture, the end processes is somewhat circular. Ideas breed new ideas, which breed new ideas on the back of the decline of the old idea. The development of artistic representation (dance, sculpture, painting, music) demonstrates this process.

Proposition 5: *Beliefs provide meaning to information flows which are then used to determine resource use by subsystems.*

2.4 Strategic dimensions

Summarised, the discussion on linking mechanisms indicates that it is the pursuit of resources which largely conditions choice. It is information about the results of that pursuit which signals to the decision making entity (individuals, organisations, or society) whether it is following useful strategies. It is through the process of optimising resource access that learning takes place and significant changes in culture and values are achieved. This suggests that the most powerful strategies will go to the heart of resource access, and will potentiate signals which show which social or environmental performance will allow for access to resources on improved terms.

Proposition 6: *The most powerful strategies for encouraging sustainable natural resource management are those that condition access to resources.*

Each subsystem utilises different mechanisms for maximising its access to resources. Within each subsystem there are many different interactions and many different options to optimise resource use. The headings below introduce discussion on the factors that should be taken into account when considering strategies for appropriate natural resource management.

2.4.1 Resource use by individuals

Individuals use capabilities they are born with and hone throughout their lives[13], relying on social structures, such as families, peers, educational institutions and the like, to provide the necessary skills and belief systems to interpret information and utilise that information to access resources.

Individuals, for example, use information for decisions to invest, produce or secure resources, and interpret and use the information they receive in ways that will maximise personal goals and standards.

Interactions within the individual subsystem suggests a number of factors which should be considered in designing interventions designed to encourage appropriate resource management by individuals:

[13] Our model of human functioning is based on Social Cognitive theory (Bandura, 1986).

- Information access and how information is filtered/interpreted is a proper concern of strategists concerned with natural resource management. Studies by Terry Leahy on popular responses to Environmental Issues in Australia illustrates the powerful role interpretation and belief systems have on information about environment. In interviews with a wide range of Australians he identified factors such as: The skewing of information to reinforce beliefs that environmentalists are blind to the "needs" of people; the belief that politics is a cynical exercise by a controlling elite and therefore should not be trusted to deliver socially beneficial outcomes; and the belief that a significant cause of unemployment in Australia is committal of overseas aid funds.
- The cognitive capabilities[14] and learning opportunities of individuals must be considered in designing strategies for natural resource management. A failure of decision competence in resource use can have devastating consequences for natural resources, but does not necessarily reflect lack of goodwill on the part of individuals, or a lack of commitment to sustainability.

> "Environmental regulation was frequently seen by my interviewees as a restriction in their control over their own private space and leisure options…Many interviewees were directly critical of environmentalist attempts to curtail consumption in any way. Petronella enveighed against recycled paper, claiming that it was of poor quality and had become so prevalent as a result of environmental pressure that it was difficult to buy anything else. She claimed she did not have time to recycle rubbish and opposed any government attempts to impose rubbish recycling."
>
> *Quote from: Leahy, 2000(b)*

- Personal resources impact on decision making and action. People assess resources they have available and how variations in activities they are accustomed to may impact on these resources. People also consider the quality and extent of available resources to implement choices – and how use of these resources will impact on outcomes. The resource impacts of past decisions have an effect on perceptions of the consequences of decisions. People require incentives to change behaviour. Most have a comfort level with their current utilisation of resources. Changes to their utilisation patterns may be threatening.

A systems view of individual decision making and action suggests that to change the decision making of an individual to better reflect resource management goals, a strategy should encompass management of information flows, analytical frameworks, knowledge creation through learning and experience, and incentives. It should also require attention to feedback on consequences and the way in which consequences are interpreted by individuals.

> Alan Woodward from Twyford Consulting commented that community participation and consultation are key ingredients in fostering awareness and commitment to improved natural resource management, reflected in documents such as Agenda 21 and government efforts such as Landcare programs and Catchment Boards.
>
> Participation, in terms of the theory on human behaviour advanced in this report, is one method of expose barriers to change – a fundamental in the research program we propose. In addition, participation in the formulation of change, helps those who need to make the change to make required value and action adjustment.

We have illustrated how such strategies can be determined in Figure 2.2. Box 2.1 describes the diagram.

Natural resource management, requires simultaneous consideration of a number of factors. In order for these factors to be properly

[14] Capabilities, in the sense we are using the word, are ability of individuals to represent the world in terms of symbols (e.g. language, diagrams), anticipate consequences (apply forethought), learn vicariously, and learn through reflection (enabling self-regulation of behaviour) (see (Bandura, 1986).

addressed, management must be accompanied by adequate data about:

- Information flows (education strategies) that take account of information filters. This requires in-depth knowledge of both recipient's "working" information base on natural resource management and the barriers to acceptance of information to change current practices.
- Related to the provision of information and barriers to its acceptance is the need to consider the capabilities of people to understand and utilise the information. There needs to be an understanding of capabilities of people, that is, the way they currently interpret information and understand the consequences of actions. From such understanding it would be possible to design programs which alter the perceptions of people and their analysis of consequences.
- Neither acceptance of information, nor capability to understand and use information is sufficient for people to change behaviour. For the final step to take place, resources must be available. An individual may, for example, keenly understand the need for recycling, but when there is no infrastructure for them to do so, their ability is curtailed. Strategies for change, therefore must incorporate implementation of structures to enable change to be effected.

Taking these factors into account, we propose a research agenda as shown in Box 2.2 to provide the basis from which natural resource regulations and management strategies can be developed.

Box 2.1: The individual subsystem – commenting on Figure 2.2

Three flows – information, meaning and resources - structure the individual's decisions. These are interlinked in many ways, with information (for example) being the nexus for decisions to invest, produce or secure resources, and goals and self standards being pervasive of the way in which information is filtered and adjusted leading to decisions. The system, in a highly stylised and simplified form, is represented in Figure 2.2[15].

The system representation highlights a number of important linkages between the individual(s) and the organisation. The individual is

- The mechanisms for collecting, filtering and providing information to and within the organisation;
- The source for decision making frameworks, systematised and adopted by the organisation;
- Influences of the goals and self standards of the organisation;
- Provides resources, produces outputs, and the takes us resources (including the outputs) of organisations.

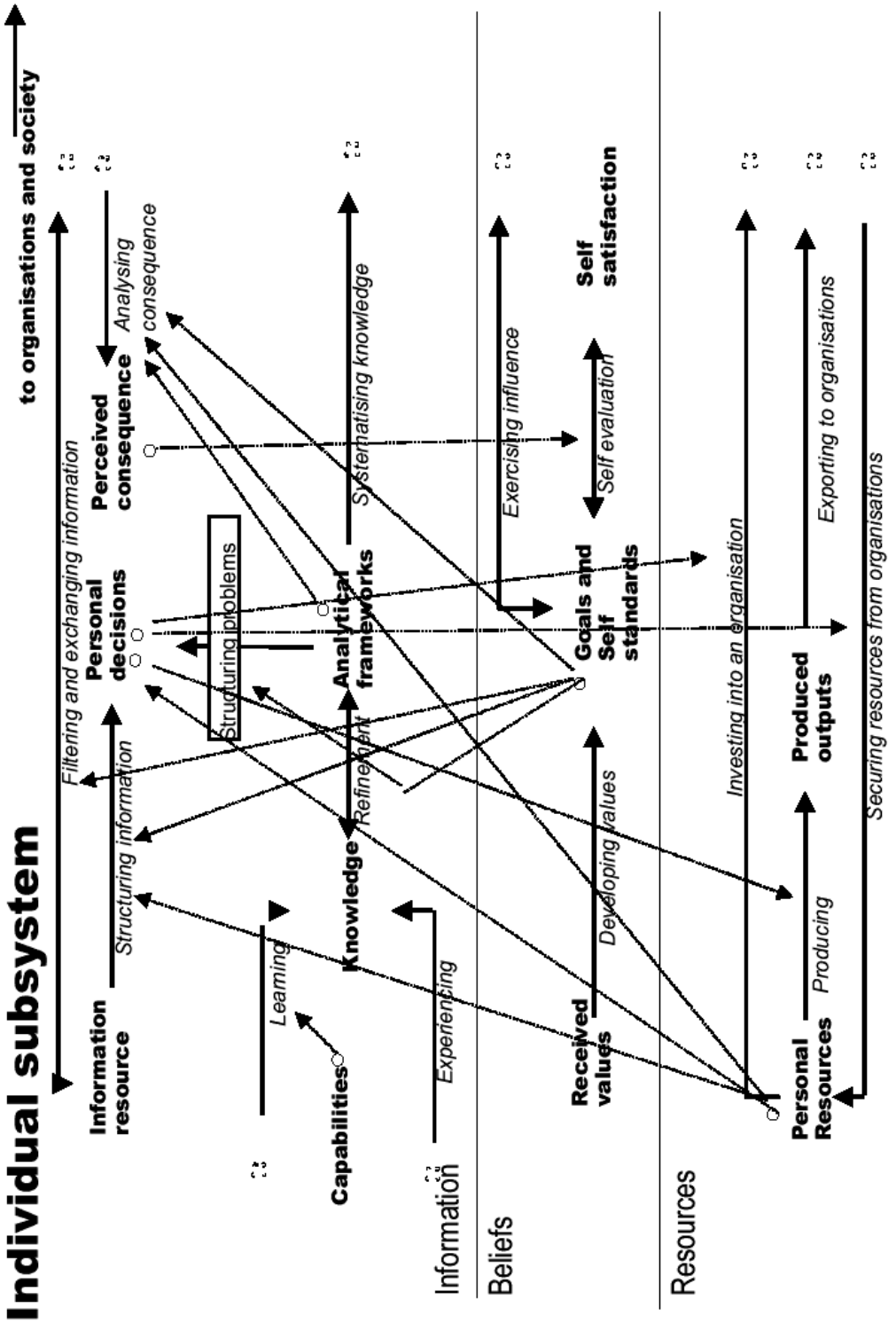
These four systemic relationships point to where strategies to increase the probability of responsible choice by individuals can have significant impacts. It suggests that strategies to sensitise individuals within organisations to the systemic effects that their actions in these four areas can have may be a powerful approach to resource management strategies. The opportunity is to intervene in the mechanisms through which the patterns of operation of an organisation are created – information, decision making, goal setting and output provision.

The implications for natural resource management strategies are substantial. The linkages suggest that any one strategy (for example consumer education, or pricing of resources) is likely to be suboptimal. Systemic intervention would involve addressing the key input areas that are highlighted above. These are:

- Data about consequence of past actions/decisions (feedback);
- Information and training to structure decision making (improving capabilities);
- Opportunities to experience the application of desirable decision structuring approaches (improving capabilities);
- Peer and other influencing of attitudes (values development);
- Linkages to resource acquisition or resource deployment effects (information).

[15] A number of elements and linkages have been excluded to reduce complexity:

· Figure 2.2: The individual subsystem



Box 2.2 – Research questions to underpin effective natural resource laws targeted at individuals

Information

Information is fundamental to making decisions and taking action. To be effective, natural resource laws must take into account current information sources and status of understanding about natural resource use. The answers to the following questions should form the basis for the formulation of natural resource regulations and management strategies:

- What information is currently available to individuals about resource use management?
- What are the barriers to accepting and utilising that information?
- What form should the information be in to make it accessible and to people overcome barriers to its acceptance?

Capabilities

Even when people understand why they should engage in sustainable resource management, they may not know how. Having information on the changes people need to make and learning they need to undertake, provides a further information base for the formulations of natural resource regulations and management strategies:

- How do people currently use information about natural resources?
- What programs should be put in place to teach people new skills/ways of thinking to improve resource use?

Resources

At the heart of the effectiveness of any legal instrument is its resource impact. This is both in terms of allocation by the targeted communities, and by the authorities charged with its implementation. In natural resource law in particular, issues of feasibility are critical to the law being made meaningful. Therefore, it is important to know:

- What incentives exist for people not to change their natural resource use?
- What incentives/resources need to be put in place to encourage people to manage natural resources appropriately?

From answers to these questions, it is possible to determine if there is a basic understanding of the principles a particular law wishes to uphold, whether people know how to carry out the dictates of law and have the resources to do so. From answers to these questions, it is possible to identify how best the law should be framed, and the types of education and resourcing strategies that should be concurrently set in place. The objective of natural resource laws should be to help the shift in individual and community attitudes from one where they think the principles embodied in legislation is an imposition on their life style, to one where it is an accepted and integral part of their life style. In terms of our model, a measure of the effectiveness of natural resource regulation is its capacity to internalise sustainable natural resource use.

2.4.2 Resource use by organisations

The organisation subsystem carries out analogous processes of information processing, belief formation, and resource movement to the individual. But the collective nature of the organisation gives it unique characteristics, not least of which is a culture arguably independent of any individual within the organisation. Patterns of response to the signals from the outside world, and patterns of resource allocation, are a collective response by the system to its context and purposes.

To ensure internal operations move them towards their goals, organisations allocate tasks to be performed and coordinate the performance of those tasks[16]. The sum of the way that an organisation does this is its structure. Interactions within an organisation - the information flows to carry out the tasks – are carried out both formally and informally. Formal interactions are incorporated in standardised processes for completing tasks (rules and regulations, job standards, etc.) and in hierarchical structures. Information interactions are incorporated in the culture within the organisation which are embodied in the informal power structures within the organisation (e.g. the most senior operator may have more actual power in how tasks are carried out or how information is interpreted within the organisation that might appear from a formal job description) and precipitated by stories and norms ("this is the way we do things around here!"). Organisations also use incentive to motivate individuals. Incentives come in both monetary form (wages, bonuses, awards and the like) and non-monetary from (praise, promotion, recognition).

As well as managing its internal operations, the organisation seeks to manage its environment[17] - from where it derives its resources. As is the case with all open systems, the organisation both influences and is influenced by its environment. It obtains information and resources from the environment and it provides information and resources to the environment to make the environment.

Interactions within the organisational subsystem and its environment suggest factors which should underpin strategies to encourage responsible resource management use by organisations.

Figure 2.3 represents the organisation subsystem and identifies a number of elements and linkages central to strategy formulation. A circle is used to represent collective culture. A number of signals to the creation of culture, and effects of culture on the decisions of the organisation are highlighted but not represented as direct relations as the process of culture formation is non-linear and complex.

What does this system representation tell us about strategies that are likely to increase the likelihood of any organisation acting in a consistently responsible manner?

It tells us to pay attention to mechanisms of data capture and data filtration by organisations. Outside governance through organisational goals, standards and compliance, how the organisation goes about processing information for decision making is an important concern in the operation of the system through which organisations make choices[18].

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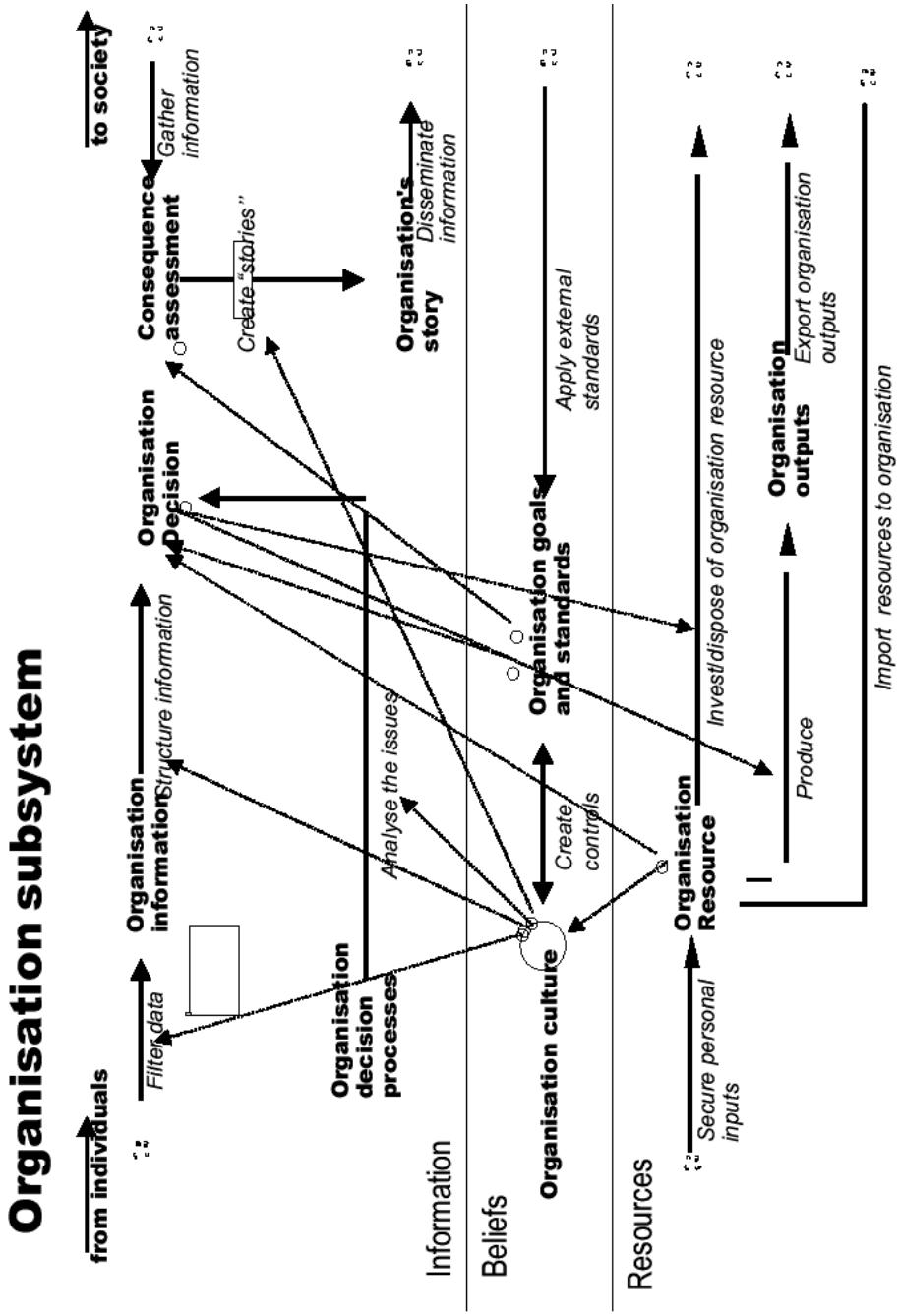
[16] Organisation behaviour theorists, such as Mintzberg (1996), detail the operation, advantages and limitations of organisational structures on the behaviour of organisations.

[17] Here again we are using the word "environment" to mean those factors not within the boundary of the subsystem.

[18] Extensive work has been carried out on the importance of informal mechanisms of information dissemination in the police force. See, for example, (Adlam, 1982) and (Verbeek, 1997)

Figure 2.3: The organisational subsystem



- Story making and dissemination within the organisation and outside the organisation is also important. The effectiveness of story telling is linked to the organisation's capacity to secure access to community resources. How an organisation is perceived is vital to its capacity to secure resources. This in turn suggests that how the media are pre-disposed to deal with corporate stories may be significant in shaping corporate behaviour.

> Chris Bourne from SEDA observed that major changes to the management of resources by the building industry would only occur when the strong nexus between apprentice and master is broken. She noted that often information provided to apprentices about materials use in the formal education system is negated by senior operators who give apprentices different instructions and discount "useless learning".

- Organisational goals and standards represent a composite of imposed requirements, including law, and internalised standards. There is an interaction between these two – when organisational culture and imposed requirements line up, one can anticipate incorporation into organisational behaviour. When this is not the case, either culture or societal imposition may create the standards applied in organisational decision making but the effects of either will be less powerful. Organisations with a culture of social or environmental responsibility do not need to rely heavily on internal rules or processes to ensure compliance with community rules.

Strategies to most effectively influence resource management by organisations, therefore, require simultaneous consideration of a number of factors:

- The channels through which organisations obtain their information. Organisations obtain their information from market intelligence, market signals from purchasing patterns, media, informal feedback, letters from customers or regulators etc. These factors provide the basis for reviewing the effectiveness of past decisions (and their implementation) on achieving the organisation's goals and meeting its standards. Knowing what these channels are and the barriers that may exist in accepting information from outside these channels is important base-line data. Every organisation will be slightly different in the method of capturing data, but generally, organisations within industries can be expected to have similar characteristics[19]

> Professor David Patterson observed that bureaucracies seem to trivialise compliance by turning it into a rubber-stamping exercise. The structures of current bureaucracies have not yet adjusted to natural resource management challenges of the twenty-first century. Neither the skill base, nor the management techniques to appropriately use the skill base have been developed within most government departments.
>
> An example of this problem – which simultaneously highlights one of the tensions with greater community participation in resource management – is the difficulty many volunteer coordinator within government departments have in convincing their managers of the importance of on-the-ground involvement in the work of volunteers to keep them motivated and participating. The mindset of management is that volunteers are simply unpaid workers and can be managed as such.

- People within the organisation and in society are the target for the organisation's messages or "stories", in the form of product marketing, political positions, representations, advocacy, public relations or a host of other communications mechanisms used to position the organisation favourably in the eyes of society

[19] This, in itself, is an statement/assumption worth examining in more detail.

(or parts of society), to stimulate the flow of resources to the organisation. In some cases these messages may not support sustainable resource use. For example convenience of plastic bags is broadcast to consumers, whereas the message that society carries the cost of plastic bag disposal (through taxes to fund public infrastructure, litter, public clean up programs) is not broadcast.

- External standards, in the form of laws, technical standards, customer standards, or other mandated or strongly persuasive standards, form part of the organisations' control and governance system. The strength of this incorporation depends on other variables (such as fit with culture, power of the enforcement mechanisms and the like). Linking compliance with these external standards to the capacity of the organisation to secure resource is a powerful mechanism to shape organisational decision making.

> James Franklin provides an eloquent argument regarding the distortions that occur in the use of current accounting standards. He notes that current accounting techniques "enable costs to be distributed to people against their will, and (the victims) have no legal or other recourse because of a combination of difficulty in measuring the loss and the lack of a legal regime to sheet home losses to those causing them more of less directly.
>
> *Quoted from: Franklin, 1999*

- Strategy making is fundamentally the pursuit of resources by the system, generally with a nexus to achieving some stated or desired goals (the achievement of which justifies the community investment of resources into the organisation). Adjusting resource flows from society to the organisation is for that reason a powerful manager of organisational behaviour. The flow of resources to the organisation is one of the primary dictates of its strategies, culture and behaviour.

Taking these factors about organisations into account, we propose a number of research questions, as shown in Box 2.3. Answers to these questions would provide a sound basis on which to design natural resource regulations and management strategies to influence the behaviour of organisations.

Box 2.3 – Questions underpinning effective natural resource laws targeted at changing organisational behaviour

Information

- What channels do organisations currently use to obtain information about natural resource availability?
- What are the barriers to accepting and utilising information about natural resources from other sources?
- How can natural resource legislation tap established organisational information channels be tapped and in what form does information about natural resources need to be presented to make it presentable to organisations?

Culture

- What informal methods of information access and dissemination exist within the organisation and barriers do these methods pose to implementation of the principles of natural resource laws?
- How can these barriers be overcome?
- Do informal norms within the organisation ("ways we do things around here") regarding the use of natural resources align with principles promulgated by natural resource laws?

- How can norms be more definitely aligned to external standards?

Resources

- What messages (stories) does the organisation give to society which influence its capacity to secure natural resources and how do these messages align with sustainable natural resources use.
- What natural resources are fundamental to the organisation?
- What external regulations and standards currently effect access to those natural resources?
- How should these be changed to align access to natural resources with sustainable resource use?

2.4.3 Resource use by society

Society uses laws and attached regulatory systems, familial units, political systems, religions, and the like to maintain social cohesion and to manage resource access[20].

The operation of law as part of the regulatory system is the theme of Part 3. Law, unlike philosophy and religious beliefs is an extrinsic societal mechanism. For laws, or the intent of laws, to be maximally effective they must be coordinated with intrinsic systems, that is, beliefs and values held by organisations, individuals and society[21].

Because organisations are a social artefact, resources used by individuals and organisations never leave society. They are reprocessed and recycled within the society. The only point of true export is when they become removed from use (such as when waste returns to the ecosystem, including when a person dies). This fact is at the heart of the legal tension between private property and communal rights which is constantly evident in natural resource management – "ownership" is at the level of the social system, deceptive.

Similarly, ideas and beliefs circulate within society and do not leave it. They have no life outside the society. They may become redundant and replaced by others, but for as long as they exist they do so within a social framework. For these reasons the concept of import and export between society and organisations and between society and individuals is a convenient fiction.

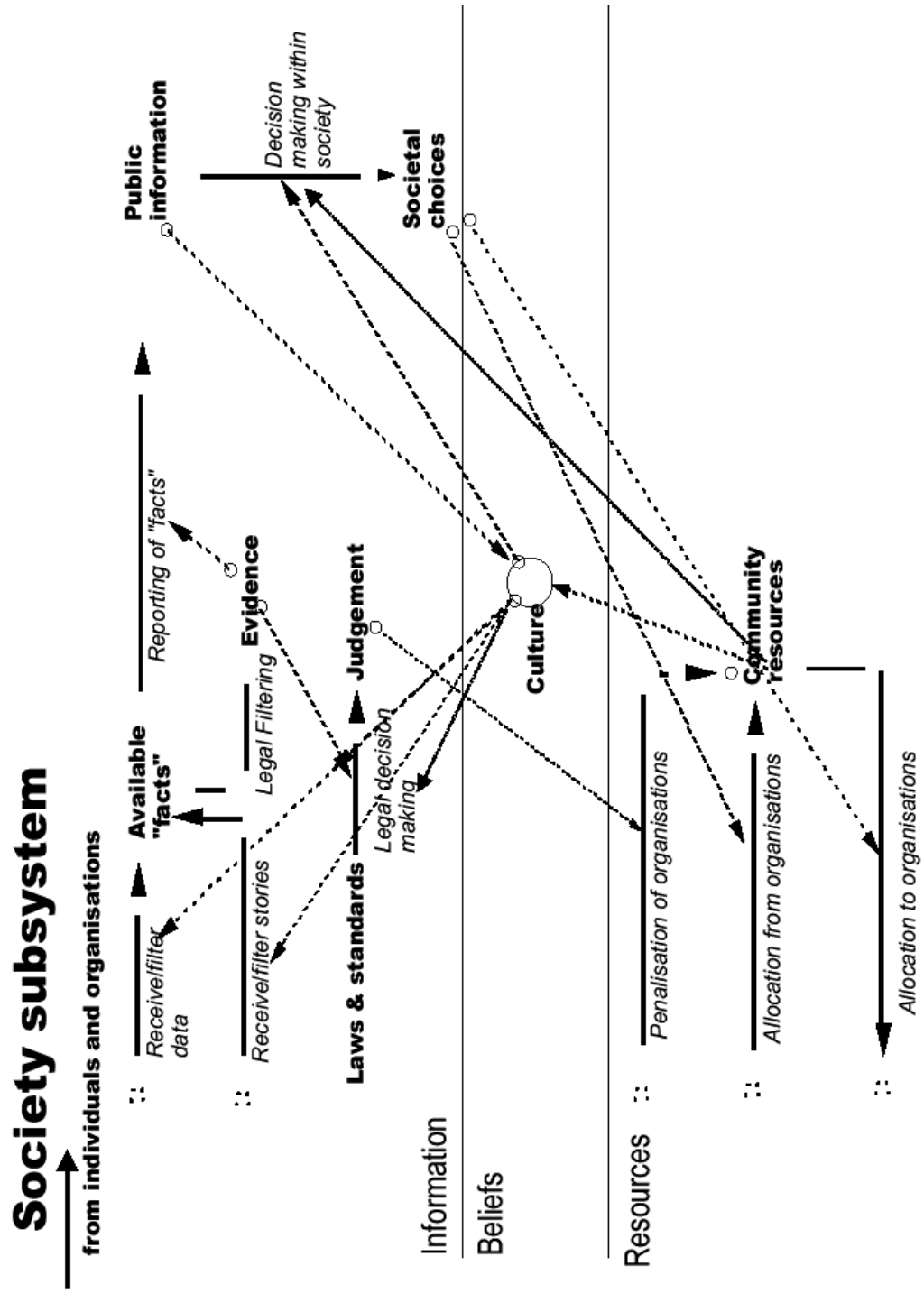
By adopting that fiction we can identify a number of strategies to improve the likelihood of environmentally responsible behaviour. Figure 2.4 illustrates the elements and linkages of the society subsystem.

Society uses information in many forms. They include real data (scientific facts), stories from people and organisations, information self generated within the society (literature, scientific theory, myths), and information generated for the purpose of regulating the operation of the society itself (laws and standards). Information available is a subset of the mass of information that might be presented to it, with the gap between the possible information and the captured information reflecting limits to technology, and filtration processes. An issue in the management of resource use is the nature of information flows within society. Since information is

[20] For a discussion of the operation of these structures, see the work of sociologists such as Giddens (1997)

[21] For a discussion of intrinsic and extrinsic motivations, see Attachment 1.

Figure 2.4: The society subsystem



filtered to fit with preconceptions and preferences, shaping information flows to fit within prior belief frameworks becomes an important element in strategies of informing.

- Of the available facts, only some receive wide dissemination to society. Mechanisms include not only the media, but also informal and word of mouth, political processes, technological access (www) and other mediated flows of information into the public consciousness.
- Public information and culture (which provide the mechanism for adding meaning to that information) are the keys to decision-making by society. The choices made by society impact on the allocation of resources to organisations (and individuals) through mechanisms such as purchasing preferences, political actions, pricing of resources, legislation, and direct action (such as consumer boycotts or consumer selection of preferred suppliers). These feedback loops between any one organisation's practices and the reactions of society are generally indirect, except in those circumstances, when public media become involved in highlighting and communicating the issues[22].

> The Ethical Investment industry is one set of organisations which might influence other organisations to adopt sustainable resource use options. However, the Ethical Investment industry's capacity to do so is currently hampered by a lack of accessible information about the natural resource use by organisations. Methods that might make such data more accessible are environmental impact reports (in the UK, these are being made mandatory). Accessibility is not only influenced by lack of data per se, but also by lack of data standardisation to enable comparisons between the operations of organisations.
>
> *Information obtained from interview with Duncan Patterson*

- The operation of laws and standards, as formal mechanisms for exercising control over organisations and individuals, is a special case of social control. The culture of a society is reflected in its laws and in the way judgements are made within the legal system[23]. The outcome of judgements is part of the flow of information into the general community, but more particularly is represented by the transfer of resources within society. This is characterised as "penalisation" of individual organisations (though in civil matters at least, this penalisation is generally accompanied by a corresponding benefit to the successful litigant).

Natural resource use is carried out through the decisions and actions of individuals. It is society, however, which is the custodian of natural resources. It is in the interest of society to understand how to control the use of natural resources by individuals and organisations.

As we have already noted, one of the main mechanisms used by society to control the behaviour of its participants is through laws and regulations. We turn, in Part 3, to a more in-depth discussion of the operation of laws and regulations and means for strengthening their operation in natural resource management.

[22] This is probably the reason why the many attempts to link ethical performance to economic performance are so tenuous – the linkages are systemic rather than direct.

[23] Discussed in Part 2.

2.5 Implications for intervention

Many elements and processes shape natural resources use by individuals, organisations and society. In the social systems model we have described above, we have grouped these elements and processes into three categories: information, belief and resource flows. On the basis that the role of any intervention is to improve sustainable natural resource use, the operation of these flows needs to be more precisely understood. We have suggested a number of questions, in Boxes 2.2 and 2.3 that should be answered to enable the formulation of strategies that encourage responsible resource use. From information we have to date, a range of intervention strategies suggest themselves.

Table 2.1: Systems interventions to alter behaviour

Subsytems and processes	INDIVIDUAL ⟷ ORGANISATION ⟷ SOCIETY		
INTERVENTIONS IN INFORMATION (the feedstock of decisions and reflection on consequences)	· Improve individuals' information about: · Potential impacts of choices, · Issues relating to the individual's self standards, · Potential resource impacts, to reduce inadvertence to consequence. · Improve task decision competence so as to reduce adverse impacts of mistakes.	· Reduce inadvertence to consequences. · Improve information processing/decision making capability. · Manage information filtration. · Manage the outflow of information · Improve information about standards and required of the organisation. · Ensure effective communication of decisions.	· Increase awareness of societal "rules", expectations, and sanctions. · Increased public reporting. · Strengthen legal regulation of unacceptable activities. · Tightly link legal decision making and community standards.
3 INTERVENTIONS IN BELIEFS (the shapers of choices)	4 Strengthen ethical education. 5 Stimulate debate on the ethical dimensions of choice. 6 Articulate self-standards. 7 Encourage discussion of self-standards in organisational decision making.	· Formalise organisational standards. · Education on societal standards and expectations (including legal standards) · Design culture to embrace responsibility, through resource allocation and communications. · Debate organisation standards.	· Strengthen the link between social responsibility and access to resources. · Debate community values and standards. · Strengthen institutional frameworks for values development.
INTERVENTIONS IN RESOURCE USE (the subject of choices)	· Use rewards and sanctions to shape attitudes to responsibility. · Ensure that individuals have the resources to implement decisions. · Invest resources with conscious regard to the responsibility performance of the organisation.	· Select markets and sources of resources with concern for pressures on organisational standards. · Link rewards to demonstration of competence, self-standards and organisational standards and values. · Ensure that resources are adequate to implement decisions.	· Strong resource allocation signals about the acceptability of their performance. · Transfer the costs of irresponsibility to those with the power to ensure responsibility. · Make demonstrated responsibility criteria for debating resource allocation. · Withdraw resources/patronage/market from organisations, which do not demonstrate responsibility.
LINKAGES	Legitimate discussion about values, beliefs and organisational responsibility in all institutional settings. Shift attention from individual responsibility to organisational responsibility. Develop strategies to entrench responsible action and responsible processes.		

Part 3

The legal terrain

In Part 2 we developed a systems perspective on natural resource management decision making. We highlighted that the absence of a systems framework for understanding behavioural responses is highlighted as a barrier to effective resource management.

In Part 3 we will consider first some special system characteristics of the law. Then we will consider the scope of environmental laws, and the effectiveness of these laws.

Propositions derived in Part 3

Proposition 7: *Environmental laws reflect society's efforts to enshrine values for natural resources within its culture.*

Proposition 8: *Law is a factor in shaping the situation in which individuals, organisations and society operate and influences the strategic and tactical options available to individuals and groups.*

Proposition 9: *The legal system is a weak approximation of community values. It can only regulate extrinsic manifestation of intrinsic choices made by individuals.*

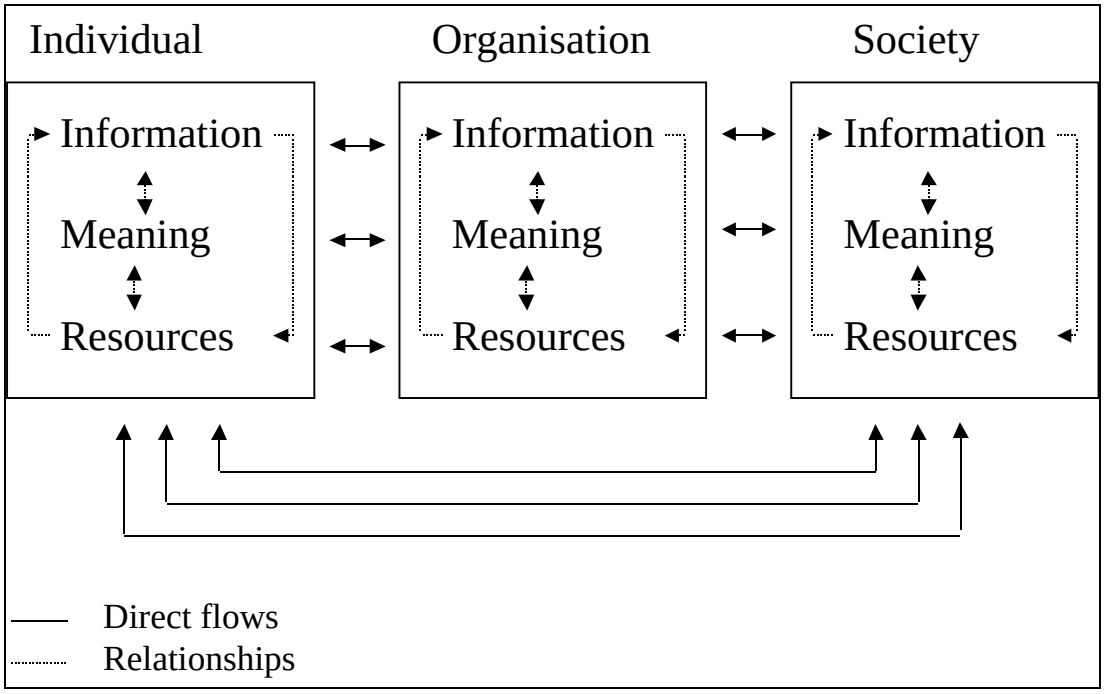
Proposition 10: *Regulations facilitate transactions society wishes to encourage and impose de facto taxes on activities it wishes to discourage.*

3.1 Introduction

In Part 2, we provided a model for understanding the social system in which natural resource management must work. The model describes social systems as open systems acting in response to their environments.

The model contains three subsystems: individual, organisation and society, nested within the environment. The environment is the overarching imperative upon which the welfare of the subsystems depend. The behaviour of each subsystem is guided by: processes which provide information about the environment and about other subsystems; resource flows from the environment and from other subsystems; and belief systems which give meaning to information and resources. The interpretation of information, the utilisation of resources and the belief systems held by subsystems are embodied in their standards and values and in social structures, such as political, religious, economic and legal systems. All subsystems contribute to the development of the social structures and are effected by them.

Figure 3.1 – Systems interactions



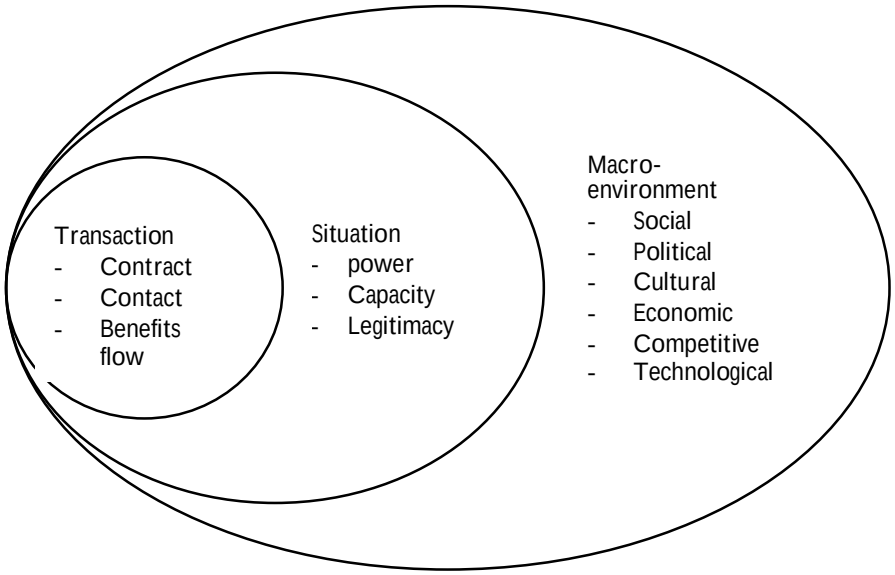
In Part three, we focus in more depth on one of the social structures, the law. We will explain its role, its limitations, its development and its effectiveness in natural resource management. Our analysis of the law is based in the model we have proposed. Our objective is to derive ideas, which may be developed through research, about how to increase the effectiveness on natural resource management.

3.2 The social role of law

Fundamental to the concept of open systems is that they act in response to their environments. In human decision systems, the environment includes not only the tangible world, but also the intagible world of concepts and beliefs. The law operates as part of the decision environment of resource users at three levels:

- *The macro-environment level*. The *macro-environment* frames strategic possibilities. In addition to the law, this macro-environment includes the social, cultural, political, economic, competitive and technological influences on actors' activities. One key to successful strategy is creating a fit with the macro-environment, to maximise access to resources.
- *The organisation situation level.* The law shapes the *situation* of the organisation (or its positioning within the system), that allows it to or precludes it from pursuing strategic possibilities. To do this, the law uses mechanisms like taxation, proprietary rights to tangible or intangible assets (viz, patents, designs, plans or secrets) and the legal responsibilities of management. In these and a host of other areas, the law predisposes the organisation to respond to its environment in particular ways. The legal situation of the enterprise is a source of strategic advantage or disadvantage for the organisation.
- *The transaction level*. The law has an impact on each *transaction* made by the organisation or its actors. Over and above contract law, decisions and actions carry with them legal rights and responsibilities, either beneficial or costly, depending on the quality of the decisions and the situations that subsequently arise.

Figure 3.2 – Legal structuring of transaction environment



3.2.1 The macro-environment

Law helps shape the social, cultural, political, technological, economic and competitive environment. Law is the primary tool used by parliament to give effect to the will of the community. As such it is pervasive in any area where government action is involved.

Thus law becomes the means through which slavery and child labour are abolished, or formal recognition is given to the equality of individuals in society. The debate as to whether the law follows or leads social change may be spurious from an open systems perspective. The law changes its role from situation to situation and from jurisdiction to jurisdiction.

Governments and the judiciary are involved in creating laws that generate social and cultural change. This includes legislation that changes demographics (e.g. immigration laws or social security laws), alters the rights of individuals and communities (e.g. anti-discrimination laws or class action laws allowing collective legal action) and redresses power imbalances (such as requiring managers to give priority to the interests of the company and its shareholders, or public servants to be attentive to the rights of the communities they serve).

Law directly influences economic behaviour, such as the concentration of media ownership and changes to ownership structures (e.g. the prohibition against takeovers without compliance with securities regulations, or the prohibition against fund-raising without a prospectus). This influence is particularly evident in the Trade Practices Act, which prohibits, for example:

- Acquisitions with the potential to create monopolies;
- Actions by the economically powerful to prevent effective competition;
- Abuse by a company of their position in the marketplace to damage less powerful competitors (if this is their intention, or if their actions cause substantial adverse effects on competition).

The pervasive influence of the law on the economic climate is reflected in the amount of law specifically designed to affect commercial activities. There are regulations designed to govern the relationship between worker, employer, customer and supplier, as well as the laws of contract. There are laws designed to proscribe undesirable practices such as insider trading, laws against exploitative selling practices and laws concerned with pollution control. There are laws designed to redress damage caused by enterprises, or to prevent damage from occurring, such as those concerning the transport of dangerous substances or the control of dangerous industrial processes.

Economic structure is also influenced by sector specific regulation. In some industries, law has traditionally restricted participation. Such was the case with banking until the mid-1980s, and the airline industry until 1990. In others, a government license is a significant element in determining the structure of an industry. This category includes radio and television transmission, and industrial and commercial activities for which a licence is issued at the government's discretion.

The history of litigation in industries, and the rules resulting from that, influences industry practices. For example, the insurance industry, and hire or rental businesses, where civil liability issues have been fundamental in the way the industry has evolved.

The final pervasive influence of the law on economic activity results from the structure and nature of the law itself – the behaviours it encourages and the costs and benefits it carries with it. The existence of the legal system influences how managers approach relationships and the resolution of conflict in business. This gives rise to strategies and commercial approaches that would not otherwise apply:

- Legal structures such as companies and trusts allow individuals to enter into contracts collectively, essential to modern commerce. Without these structures, it is hard to imagine the functioning of enterprise.
- Insolvency laws facilitate entrepreneurship by making it possible for innovation without the entrepreneur risking the loss of everything.
- Legal processes facilitate innovation by making economic rewards more likely, notably through intellectual and other property rights (e.g. in a recent case in the United States an individual inventor was finally able to reinforce his claim to

ownership of windscreen wiper technology against all the major vehicle manufacturers).

3.2.2 The transaction situation

Transactions create value and profit, and the law shapes the *situation* within which transactions occur. There are three main ways in which the law shapes the situation within which transactions occur:

- in determining the legitimacy of the transaction;
- in influencing the bargaining power of the parties to the transaction; and
- in shaping the strategic and tactical options or capacity of the organisation to enter into a transaction.

Society precludes certain types of transactions. Agreements to sell slaves or carry out murder are obvious examples. Sanctions against euthanasia or transactions designed to give effect to an illegal purpose (such as unlicensed gambling) are more difficult to categorise as always illegal.

Other transactions are conditionally legitimate, such as contracts with persons under the age of eighteen (or twenty-one in some States). Other transactions can only occur when a permit is obtained (such as the dumping of dangerous chemicals or the carriage of corrosive substances).

The law influences bargaining power in a number of ways:

- The law prohibits or restricts an individual's and organisation's ability to exercise power (as under the Trade Practices Act or in relation to the mentally disabled or juveniles).
- The law can reduce power imbalances. For example, freedom of information legislation is designed to minimise information asymmetry for citizens seeking to contest the decisions of governments. Landlord and tenant legislation seeks to provide a fair basis for settlement of property disputes, devoid of economic advantage. Consumer protection laws serve to redress the imbalances of power between the consumer and supplier.

The laws described above are among many that substantially alter available tactical options. This effect is apparent in the media reports of battles for the control of publicly listed corporations. It is also apparent in the use of the laws of defamation to preserve public reputations, and in the use of legal tactics to protect the commercial value of products.

An organisation's or individual's capacity to respond to environmental challenges and opportunities is a function of the situation in which they find themselves (or perhaps, more accurately, their perception of that situation). The law substantially shapes both that situation, and the strategic and tactical options available to the individual and the organisation to respond to the situation.

3.1.3 The transaction level

The law is embedded in transactions. For every transaction there is a flow of:

- contact or communication between the parties 9flows of information);
- contractual relations between the parties (information, coupled with beliefs to create commitment); and

- benefits to the parties (flows of resources or information).

The law is intrinsic to each of these flows.

Information is the feedstock of decisions, and as such is a source of wealth and power. It is not surprising, then, that a substantial number of laws concern communication at all levels – interpersonal, mass media, oral and written. These laws form a framework for communication. They are ostensibly designed to ensure that the flow of information is untainted by deception, and unconstrained by the self-interests of the controllers of the communications media.

In private communications such as mail, the law is concerned with the integrity of the communication and the proprietary interests of the senders and receivers of the physical message. There are many other ways in which communication between parties to a transaction is affected by the law:

- The Trade Practices Act prohibits misleading or deceptive conduct in trade or commerce. This restricts the content of the messages.
- There is a host of laws governing television and radio broadcasting. For example, broadcasting is prohibited without a licence.
- The laws of defamation restrict a communicator's ability to convey messages that may damage the reputation of others.
- Laws governing trade marks and the law of passing off protects the goodwill communicated by an enterprise's image, such as its trademarks, corporate graphics or other symbols.
- Copyright laws protect the proprietary interest of the creators of visual or written messages and music.
- Communication channels such as the post and telephone are controlled by national legislation and have been addressed by a long history of court-created law that protects the integrity of the mail and other private media.
- Couriers must work within a framework of traditional laws protecting the ownership of the messages they carry.

What is the effect of laws on transaction making within society?

Some aspects are obvious – concern for legal risk is increasingly an element in choice in today's world. But what is less obvious is the impact that law's pervasive presence on the community sense of right and wrong, the systemic effects on beliefs and meaning, and how these are traced through into new patterns of resource allocation, or new information flows?

In Part 2 we described three interlinked subsystems: individuals, organisations and society. Belief systems (culture) impart meaning to the activities of individuals, organisations and society. Culture is made up of the values, beliefs, "stories", that people hold (and may vary from group to group). Culture in part defines "valuable" and directs where individuals, organisations and society expend effort. And it is in part the shaping of culture, which is taking place with the march of natural resource management (environmental) legislation and common law.

Proposition 7: *Environmental laws reflect society's efforts to enshrine values for natural resources within its culture.*

Our discussion of the role of law highlights another important function of law: its situational determinism. Laws operate to effect the situation in which individuals and groups transact. It partially sets the expectations for and boundaries of acceptable behaviour. In effect, laws provide necessary information for decision making. Laws

therefore profoundly effect the strategic and tactical options available to individuals and groups

Proposition 8: *Law is a factor in shaping the situation in which individuals, organisations and society operate and influences the strategic and tactical options available to individuals and groups.*

Proposition 8 overlaps with proposition 7 because values acceptable to members and groups in society also effect permissible options and strategies.

As knowledge develops, as environmental contingencies change, as societal needs and aspirations change, laws develop, reflecting and directing the operations of society. Law is a powerful social tool, but one with limitations.

3.3 The limitations of laws

Essentially, there are two ways laws are made:

- by the courts or judge-made law (i.e. *precedent* or the *common law*)
- by parliament (i.e. *statute law*)

Law is created by society, and reflects its values. One way in which values enter the process of legal interpretation is as implications of judgments being considered by the court, and subsequent exposition by the court of the *rationale* behind the judgment. The rationale is the reason a judge gives for deciding a particular outcome.

The rationale is important in judge-made law. Although the role of the legislature (parliament) is to make the law through legislation (statuts), and the judge's traditional role is to interpret the law, judges often are making or refining the law. They do this in part by including social policy in their judgments, though the extent to which they ought to be exercising a law-making function is a matter of debate.

Some judges make the social policy aspects of judgment paramount, and tend towards creative approaches to the development of the principles of the law. However, this focus on policy is not the common stance of the judiciary.

Courts make social policy choices whenever they make decisions. Even the apparently narrow choice to strictly follow the dictates of a precedent is a policy choice (in which case *certainty* in the law is seen by the judge as more important than *flexibility*).

The social impact of choices to interpret statutes and precedent literally can be significant. The growth of the tax avoidance industry during the 1970s occurred under the auspices of a High Court which chose to interpret tax statutes literally provided a context within which technical legal games became a means of avoiding income tax. As a result billions of dollars of revenue were lost, and the tax system lost credibility. A major rewriting of the Income Tax Assessment Act and a change in the membership of the High Court were necessary before a less literal approach was adopted.

The complexity of society is reflected in the conflicts of policy that the courts consider. Policy challenges that continually arise include:

- *Certainty versus responsiveness to change*. Certainty is based on a linear development of law; however, discontinuous interpretations of law are sometimes required to meet rapid changes in social conditions. The courts under such circumstances must weigh up the respective importance of these two requirements.

- *Individual freedom versus community interest.* The problem of determining the extent to which individual freedom should be subordinated to what the community wants is a common concern in the arguments over regulation of resource use. We have earlier highlighted the fictitious nature of ownership rights within a society. This fiction ignores the fact that natural resources are held collectively, retained within the society regardless of transitory title.
- *Responding to emerging needs versus overburdening the courts*, by allowing too many cases to reach the court system. Courts may restrict the use of a particular legal remedy if it is possible that the benefits to the community do not justify the added burden on the court system.
- *Individual ethical choice versus maintaining the 'system'.* This involves consideration of the extent to which matters ought to be decided by the individual's ethics rather than legal dictates. In the 1960s, conscription and conscientious objection raised such conflicts.
- *Societal cohesion versus cultural diversity*. The courts may have to decide whether to restrict a particular practice (e.g. child marriages) that is accepted by a particular culture, but not generally acceptable to the community.
- *Enforcing community views versus respect for the individual*. Many of the issues above are encapsulated in a continual conflict between the freedom of the individual and the collective wishes of the community.

Judgment inherently involves disadvantaging the interests of some individuals and groups. It often involves advancing some interests at the expense of others. This in turn shapes society. The challenge for the judicial system is to interpret the law so that it shapes society in a positive way.

In a society that depends on diversity and change for its enrichment, it may be both dangerous and unrealistic to expect consistent policy choices to be reflected in judgments. A consistent emphasis on one set of policy priorities may indeed make the law a straitjacket for society, which is not necessarily in the interests of that society. This is as true in relation to natural resource management laws as for any other field of law. Whilst the sustainability imperative is powerful, so too are often competing imperatives for economic performance and individual or corporate rights.

Christoper Irons from Water Research Foundation of Australia noted that regulation is inter-disciplinary in nature. For example, regulation of water use in a catchment is about social equity and must consider the current population's distribution, occupation, expectations and capacity for change. These are often defined by the resources, knowledge and social approval mechanisms locally available. In this example, regulation can play only a small part in the process of increasing sustainability by shifting social values and behaviour.

The law relies on observable evidence. It is, therefore, always in danger of creating injustice. What is observable and capable of being judged is open to myriad interpretations. The rules themselves can only take into account a limited range of considerations. As a result, the legal process can be protracted and expensive.

The law is also continually dealing in abstract notions of right and wrong, and with complex argument. It has become a specialised profession that often seems inaccessible to those inexperienced in its complexities.

All these limitations make the legal system a blunt instrument for achieving societal ends.

The emphasis on *judgment*, *rules*, even the word *law*, seem to hold out the promise of definite, certain and immutable results from the system. The trappings of the practice of law further reinforce that expectation.

Such expectations are risky, for it is not within the role of the law to provide *certainty* in preference to *justice*. At the same time, neither is it possible to be confident that justice will be delivered in all cases.

The community expects, as far as possible, that the law should provide them with certainty so that individuals can determine in advance the legal implications of their actions. However, if the law provides certainty but consistently delivers decisions that are seen as unjust, then people will seek to overthrow either the rules or the enforcers of the rules.

The legal system is simultaneously expected to deliver:

- *Certainty* — so that people know the legal consequences of their actions;
- *Justice* — with all its connotations of fairness to individuals as well as responsibility to the community;
- *Clarity* — so citizens can readily understand their laws;
- *Cost effectiveness* — which is dependent on the efficiency of the judicial system and the desirability of the outcomes of legal action;
- *Decisiveness* — a speedy response.

To understand these challenges, consider the consequences of consistently and unequivocally applying the simplest of rules, such as *you must not kill*. Would the legal system be just if the soldier who killed another person in warfare was dealt with in the same way as the premeditated murderer? What about the person who accidentally shoots another compared to the person who consciously and perhaps repeatedly chooses to kill?

The complexities of the balance of judgments of right versus wrong involved in even this most basic of rules becomes more apparent when considering the vexed issues of abortion and euthanasia. These bring into question both legal and social rules about the preservation of human life.

Such examples of the limitations of the legal system as a deliverer of justice raise an interesting point. The dictates of philosophy and morality may in fact provide more simplicity and certainty across varying situations than does the law in because these dictates are more flexible. In trying to answer the question of when killing is wrong (as an example), it may be more feasible to use moral dictates rather than legal rules.

Why does the law struggle where morality seems clear?

The answer lies in understanding that the legal system deals with the extrinsic manifestations of intrinsic choices made by individuals. Normally the law becomes involved in looking at behaviour only when that behaviour results in some physical consequence – such as damage, or physical harm, or transfer of funds. Morality, however, is involved from the point of first consideration of the issues, and needs no extrinsic signs to trigger its application.

Proposition 9: *The legal system is a weak approximation of community values. It can only regulate extrinsic manifestation of intrinsic choices made by individuals.*

This proposition underscores the basis for our assertion that effective laws are more likely to be those that work in concert with other societal mechanisms that entrench ways of decision making and behaviour.

3.4 The operation of law in society

In our description of social systems in Part 2, we noted that society has many means for securing co-ordination and good relations between individuals and organisations.

- Social censure limits the extent of anti-social behaviour of individuals or groups.
- Religious and philosophical beliefs guide people to act in ways they consider right.
- Parents and teachers endeavour to train young people in socially acceptable behaviour and the dictates of our culture.
- The community can withhold resources. For example, consumers may stop spending their dollars with certain businesses as a means of enforcing compliance with perceptions of reasonable behaviour.
- Language, which relies on commonly accepted meanings and commonly understood symbols and signs, facilitates transfers of information between individuals.
- In extreme situations people may even resort to collective violence in order to assert their value systems.

In Part 2 we identified a number of these mechanisms, and explored the fundamental structures of information flow, resource flow and systems of meaning which link these across individuals, organisations and society. The law is a special case of the operation of these structures and mechanisms, and has unique characteristics. It, in effect, works as the final regulator, when other social mechanisms fail. The resort to law is an admission that "trust" between members in society has ceased to operate. One member (or sector) of society feels that he or she (it) can no longer depend on another member (or sector) of society for fair dealing or reliable transacting.

Laws provide a common understanding about the limits to what others are allowed to do, a default basis for a set of expectations about other's behaviour. Without the capacity to trust others to act as expected, other inefficiencies in transacting arise. The main contribution of the law is not in its efficient handling of particular situations. It is in its creation of a framework of expectations on which all within a society can reasonably rely in contracting with each other (see proposition 7).

> Public trust is every bit as much an economic commodity as clean air: invisible, it is a shared benefit that everyone draws on every day; equally it may be polluted without harm to the spoiler.
>
> *Quoted from Haupt, 1988*

This concept of transactions is important in understanding the operation of law. The flow of information and the flow of resources between members of society occurs through transactions. Many of these have the characteristics of contract (consensus based direct exchange of things of value). In order for contracts to exist, relationships must also exist.

The degree of trust and comfort in those relationships impacts on the tenor of negotiations, the capacity to work efficiently without constant re-bargaining, and the degree of dependence on outside intermediaries (such as lawyers or accountants) for controls on the relationships. Unless the value systems of the parties to a transaction are reasonably congruent (or at least mutually understood), the chances of the relationship surviving the normal stresses of life are restricted. At this minimum level, ethics are integral to the operation of society when society is viewed from a transaction perspective[24].

[24] For a discussion of these issues see Fukuyama (1995)

3.4.1 An example of the debate

The debate about the economic inefficiencies of regulations highlights common misunderstandings about the operation of law.

Peter Swan (1987), in his criticism of the Pure Foods Act presents the argument that regulations are sources of economic inefficiency, curtailing the economic possibilities of organisations that could be better served through efficient operations of the market.

> When a food or a product or a brand is discovered which does not live up to expectations, either there is "voice" and complaint is made with no repurchase until quality is improved or price lowered further, or there is "exit" and that particular product or brand is shunned in favour of products that have passed the taste test.
>
> This is such an elementary and to my mind devastating argument against highly elaborate and legalistic controls such as are embodied in the food laws and associated regulations that the best legal minds that support such legislation are going to pull no punches in giving it the lie.
>
> *Quoted from Swan 1987, p5.*

There is little room to disagree that regulation is an economic drain on the community. Often it does not achieve the ends sought, and it often penalises the innocent. The question is whether this drain is countered by social gain from the regulatory system, which makes the system a net social contributor. Focussing on the dis-benefits and quantifying these gives rise to a simple "reduce regulation" call, in which the legal system is painted as a "villain". Recognition and quantification of benefits of regulation and the legal system may lead to a different understanding, attuned to recognising and rectifying the inefficiencies without the loss of the benefits.

John Goldring (1982) presents the alternate perspective on the need for regulation. His view is that regulations protect the rights of individuals that might otherwise be eroded by the activities of organisations.

> An individual consumer, whose purchases may amount to only a few dollars per year, is powerless to confront the production and marketing techniques of a multinational (or even a large local) corporation whose sales run into millions annually.
>
> *Quoted from Goldring 1982, p159.*

That legal accountability within the free enterprise system has made a contribution to social development and economic performance is difficult to dispute, given the legal system's contribution in creating climates for local and international contracting, controls over fraud and criminal behaviours, and laws through which intellectual property is protected. Regulations provides a "floor" upon which transacting parties rely when other bases of expectation have failed.

A purely economic perspective on regulation also carries within it the assumption that economic efficiency is the collective end of social activity. A purely legal perspective carries a blindness to the substantial costs and inefficiencies embedded within regulatory strategies. Narrow assumptions about the role (and interaction) of law and economics are incomplete reflections of a more complex reality.

The law serves a facilitative role within the system in a number of ways. Three examples of how law supports commerce demonstrate this proposition.

- International legal conventions governing such issues as the rules of financial transactions, warfare, the free movement of vessels on the high seas and the treatment of salvage, all facilitate commerce. In each instance they enable complex transactions across cultural boundaries, providing common rules to overcome the complexities of differing norms of behaviour and expectations.
- Many complex transactions are given effect without detailed negotiation or formal documentation. Spot trading on international markets, currency trades,

the purchase of cattle at auction, the joining of two people in an informal partnership - in all these instances, the basic rules are prescribed by law and are reasonably certain. The parties are able to enter agreements without uncertainty or extended negotiation.

- Patents and copyright, and other intellectual property, create the proprietorship required by individuals and companies to undertake research and development. Developing competitive advantage by investing in your organisation's brand or image, or inventing new products or processes, requires a degree of certainty that your investment will be protected.

Such benefits are not unique to any particular elements or interactions of the three subsystems our systems model identifies. The benefits are pervasive throughout society, throughout organisations, and in transactions between individuals.

We can translate the argument of the cost of regulation versus deregulation into systems terms and examine its affect on resource allocations. Organisations are open systems that respond to flows of inputs, and can be expected to seek to optimise those flows. Through trade, but also through other means of allocation by the community, organisations obtain access to resources. In turn, organisations transform these resources, and provide outputs to society. Some organisations earn special returns as an arbitrager of community resources. Other organisations seek resources to perform their societal functions. Because the pattern of resource allocation is so important to organisations, alterations to flows of resources have importance to the system – they send signals, and they have meaning.

> "Even if one believes that the only business of business is business and that corporations should be left alone to compete in the marketplace, there is a growing perception that the current workings of our marketplace create too many short-term pressures for short-term, narrow focused results. Quarter by quarter sales and profits must go up or the stock market punishes by sharply reducing important rewards for management and threatening them with takeover." (Jones, 1970, p128)
>
> The tendency of the business community is to see the explosion of legislative controls only as an added cost. An alternative view is that the underlying cause of the explosion of legislation is a failure to preserve ethical legitimacy in the eyes of an increasingly sceptical and well educated community, supported by an increasingly prying and cynical media.
> The approach to "solving the problem of over regulation" which is simplistically proposed is to reduce the extent of regulation. However, this largely ignores why regulation has grown.
>
> "Why should there be such concerns about regulation? Partly the answer can be found in recent massive frauds, company collapses and other dealings seen to be unacceptable in the Jurisdictions concerned. Partly the concern is the result of the scale and complexity of corporate groups now operating globally, in a world that has become increasingly litigious and increasingly hostile to incumbent boards, as predator companies stalk ever larger prey. But predominantly, perhaps, there is recognition that shareholder democracy and corporate self-regulation is inappropriate in today's business conditions."
>
> *Source: Tricker, 1988, p15*

The cost inefficiencies consequent upon regulation represent a disturbance to the flow of resources to the organisation, even when the organisation suffers no direct penalty for breaches. This suggests that these "inefficiencies" have meaningful information content for organisations. If they are of a sufficient magnitude they will work throughout the system to modify decision making and to alter resource allocation.

We can consider "inefficiencies" associated with legislation as a form of taxation imposed to discourage particular behaviour. Regulations can represent an allocation

away from the activities which the organisation might otherwise wish to pursue, into uses preferred by society. The community is *de facto* prepared to tax activities it wishes to discourage. Since resources remain within the control of society, in reality there is no cost to society in doing so. There is only a deferral of the use of resource, and a redirection away from some organisations at any point in time.

Proposition 10: *Regulations facilitate transactions society wishes to encourage and impose de facto taxes on activities it wishes to discourage.*

Proposition 10 is in effect a restatement of propositon 8 with an economics bent.

Taking this view, the cost imposed on organisations is one mechanism for exercising control, by making it expensive to "sail too close to the wind" where community values are sensitive. The dis-economies are partially feedback of community distrust of observed business behaviour, or dissatisfaction with resource allocation outcomes. These signals are not, however, only about the topics written into legislation. They are more generally about the perceived deficiencies of standards. The signals they send are not intended to only trigger responses to the legislated issue, but also a more general response to the alignment of organisational standards to community expectations. Indirect signals through resource reallocation eventually feed into the internal self-standards of the organisation.

Unfortunately, for many organisations, such deeper messages are filtered out because they are not understood.

The failure of free enterprise to effectively respond to current pressures to safeguard societal interests is evidenced by the growth in legislation enforcing "morality" in business activities in areas as diverse as:

- Honest Dealing in trade (Trade Practices Act, Contracts Review Act, Arbitration Act, Trade Descriptions Act, Sale of Goods Act etc);
- Environment Protection (Environment Protection Act, Pollution control laws, Threatened Species Conservation Act);
- Insider trading (Companies Act, Securities Industry Act);
- Taxation;
- Conflicts of interest (Companies Act and Secret Commissions Act).

The State of the Environment Report produced by the Environment Advisory Council in 1996 reported:

- Loss of biological diversity as the most serious environmental problem.
- Transport systems, stormwater and sewage and other waste disposal have substantial adverse impact on the environment.
- Inland waters in southern Australia are in poor shape
- The hole in the protective ozone layer of the Antarctic is growing larger and deeper.
- Soil erosion from agricultural land remains a problem.
- Aspects of the environment experienced by indigenous Australian remain poor.
- Old growth forests continue to be logged.

They recommend that only a systematic approach to these problems will hope to solve them to hope to secure social welfare.

Recent legislative enactments and pronouncements of the courts have moved the law further into subjective values. The concept of courts rewriting contracts because they are considered to be *harsh and unconscionable* would have been anathema to a previous generation. So too would have been the construction (after the dissolution of a partnership) of a trust of one partner for the other to allow the courts to share post dissolution profits between the former partners. So too would have been the blending of moral and legal accountability of directors and officers, through the expansion of the nature of responsibilities within the Corporations Code. But all of these events, and many more, have occurred in recent times within the legal system.

Society has embedded a tension between economic responsibility and other types of responsibility of resource managers. Society simultaneously expects managers to deliver at a very high level on all value dimensions (social equity, resource governance or sustainability, and economic performance). Why should society expect less of those whom it entrusts with the use of its (finite) resources.

3.5 The evolution of natural resource law

There is an important dialectic in the long term evolution of law. Looking at trends in legislation and in common law, it is possible to discern a systematic extension of the scope of accountability to encompass "higher order" considerations. The decision in *Donaghue v Stephens* extended accountability beyond individuals with whom one had a contract, to a broader class where harm was foreseeable. This has been further extended to encompass ever widening circles of human beings. Responsibility has expanded to encompass non-physical injury such as economic harm and the consequences of non-physical actions or inaction (such as for partial disclosures). With the advent of the corporation, artificial entities as well as persons became the subject of legal accountability. Animals have been brought within the framework by laws restricting damage to habitat, individual animals, and species[25]. We are now moving to ever widen the net, to include responsibility for the economic system (Trade Practices law); and the environment, and onwards toward responsibility for the integrity of purely aesthetic creations (artistic moral rights).

Environmental law reflects the extension of society's expectations of accountability for a growing range of concerns about how to manage the physical environment to prevent further degradation. The imperative for dealing with unsustainable use of the environment has been increasingly loud.

Demanding increased accountability does not mean that the community wants to expend more resources on the social safety nets they desire. If money is being allocated to the legal system, it has to be allocated away from some other preference. In the public sphere, this might be away from hospitals, teaching, roads, military preparedness, or any of a host of valid claims on scare resource. In the private sphere this may mean reallocation away from consumption goods, other services, or capital goods for future production. These conflicts are rapidly translated into pressure for reduction of the costs of the legal system. Such pressure is a force for innovation and process improvement in the legal system.

The traditional paradigm for regulation relied upon clear specifications of responsibility, with the intervention of the courts and the involvement of the profession as central to the structure of enforcement. Aligned with this were the legal professional associations, with their system of controls designed to protect both the public and the reputation of the profession.

Now structures are being introduced to reduce dependence on the technicalities of the law. Legislative drafting which draws on general principle rather than detailed rules, the use of industry self regulation, and non-court tribunals both illustrate the imperative to circumvent the use of the costly professional legal system. Legal drafting often incorporates terminology and concepts more associated with ethical debate than with legal formalism - terms like "fairness", "unconscienability", or

[25] Though in a jurisprudential sense, habitat was protected as a proprietory right of the king and nobles in antiquity. The difference now is that it is increasingly being protected for intrinsic rather than proprietorship values. (Grinlinton, 1966)

"social impact". Under pressure from consumer groups, use of plain English wording in insurance policies and other contracts has increased. Explanations in simple terms are required for many formal documents. Government departments are subject to public disclosure requirements, reinforced by the activities of the ICAC. Companies and industry associations are publishing Codes of Conduct and implementing various forms of independent accountability.

This mirrors broader aspects of change. Ethical concepts are more accessible for the individual citizen to debate than are legal technicalities. Compliance with community ethical standards more closely approximates the role of law in society than does compliance with technicalities. Making the law more transparent reflects the trend to increasing accountability, and community demands to be empowered in their interactions with commerce, government and the professions.

Society has been evolving new structures which allow accountability without the trappings of the legal infrastructure. No amount of process improvement will prevent the continued pressure on the legal profession and administration leading to innovations, which will at the same time deliver

- higher levels of legal accountability,
- encompassing increasingly broad and esoteric concepts of responsibility,
- at lower cost, and
- minimal adverse economic impacts.

Legal responsibility is a communal concept. The collective unit has traditionally been the family, then the community and expanding from there. From the city to the city-state, from the city state to the multi city-state and thence to the state as we have come to know it, entrenched as a fundamental of the pattern of legal practice in Australia at Federation. But the collective units of society were not frozen at Federation. Under the influence of migration, communications, transport, technology and the march of commerce, the collective unit of society has shifted, first pinpointing the country as the collective unit, and increasingly moving toward the region and the international arena as the collective unit.

The Franklin Dam issue and the use of the international agreements power to resolve what would have been an intra-state issue demonstrated a shift to the power of the commonwealth. It also highlighted a merging of legal and political decision making in Australia.

These elements have since become more pronounced. Development approval in coastal and wetland areas now requires consideration of treaties for the preservation of wetlands for migratory birds. Labour laws are framed with a touchstone being the decisions of the International Labour Organisation. Similarly with decisions on equality, the treatment of prisoners, and a range of other fields. It is interesting to note the extent to which the newly emerging areas of law are characterised by this international/political flavour, and to contemplate the extent to which the future content and practice of law will be linked into the international context.

3.6 The status of natural resource use laws

Having considered at some depth the legal system as a structure for regulation of natural resource use, we shall now discuss the developmental status of legal regulation of natural resource use.

As highlighted above, law is a composite of statute and common law. In Attachment 3, we have summarised the status of these streams, providing a lengthy, though non-comprehensive, listing of the legislated regulatory framework for the use/preservation of natural resources in Australia, State by State.

As well as specific environmental laws and statutes, there is a wealth of other regulation that contains natural resource use controls. These are found in industry specific legislation such as that governing land and water management, the management of national parks, the governing regulations of government authorities, and other diffuse sources. There are also supportive codes, such as State planning codes and policies which give on-the-ground effect to higher level policies. There would seem to be no lack of formal law to ensure sustainable natural resource management.

But is this law effective?

The answer to this pivotal management question is "no-one knows"!

Why not?

We do not have a jurisprudence of effectiveness. We have a jurisprudence of conceptual justice, and a jurisprudence of legal decision making. We have an emerging environmental law jurisprudence, which examines such abstract issues as "is environmental law a distinct category of law". But we have not developed models that would allow us to determine the benchmarks by which one can judge the management effectiveness of any legislation, let alone environmental or natural resource management law . There is no clear conceptual framework for determining what is possible with regulatory intervention, and what forms of regulatory intervention maximise this possibility. There are potential insights from different disciplines, but these are not distilled in a way that would make them useful for the task. There is no framework for judging effectiveness of environmental regulation.

Nelissen undertook a review of environmental law in the Netherlands in 1991 and reached the following conclusions:

- Environmental legislation alone is not capable of solving environmental problems, or significantly reducing them.
- But, without environmental legislation, the environmental problem would probably have been considerably worse than it is now.
- The role that environmental legislation plays in attaining environmental goals is difficult to isolate from other influencing factors (particularly political, economical and social factors).
- Taxes seem to be a particularly effective policy instrument; subsidies, on the other hand, seem to be of little consequence.
- Consensual instruments in the form of covenants are only effective in certain instance, though especially when outcome obligations have been included.
- A comparison of the effectiveness of various types of instrument is practically impossible. Experiments would have to be set up in which one section of the population is governed by one policy instrument and another (similar) section by another. Experiments of this kind are virtually impossible in a constitutional state.

Source: Nelissen, 1998

In the absence of such framework, we are left with reliance on subjective observation. Has the body of environmental law created a meaningful reversal of the trends to the loss of natural resources, or embedded concepts of sustainability in natural resource management? Our review of actions and cases leave us less than sanguine. It is hard to be positive about the effectiveness of our current approaches to regulating natural resource use.

However, studying court decisions and judgements is a short-sighted analysis of developments. As we have highlighted earlier, the systemic effects of changes in law

spread well beyond the immediate impacts of particular statutes. The possibility does exist that the legislation outlined in attachments 8 and 9, coupled with common law advances, may be the basis of cultural change and economic system impacts which are more pervasive, and which over time could lead to the achievement of goals of natural resource management.

In Part 2, we noted that the law operates as part of an open social system in which society regulates the behaviour of individuals and organisations to meet the needs and interests of the larger community. Regulations are often a mixture of what is perceived by some to be required for social welfare and a reflection of community standards. Over time implemented regulations become intrinsic to the behaviour of society members and become part of their ethical framework.

We shall turn to a survey of the state of evolution of environmental laws. In our discussion, "environment" is a word with multiple simultaneous meanings. It can equally apply to the natural resource environment, to the workplace environment, to the biota of a place. Laws with respect to the protection of the environment can relate to the protection of the status of the biosphere, rights to the utilities of the environment, protection against contamination, or the protection of human health. In our examination of the state of the courts' dealing with matters environmental, we will encompass all of these interpretations. We are not seeking to define or interpret the law, but to consider the dynamic of its evolution.

3.6.1 Environmental law and politics

The formulation of law derives from politics, at two levels. The first level is domestic politics, where through a combination of altruism, voting and deal-doing, principles are translated into policies, which in turn become translated into law. The second is international politics, where the creation of law is mediated by international treaties and/or international opinion. In environmental law the interaction of these two mechanisms is apparent. The adoption of the concept of ecological sustainability and of the precautionary principle, translated into legislative enactment, demonstrates such a process.

"Sustainability " is an oft debated term. The core concept is that the natural resource or ecology will be protected from significant depletion, such that it remains viable as either a resource or a system. The concept of "Sustainable Development" reflects the desire to match concern for economic development with the need for sustainability.

The "Precautionary Principle" reflects the fact that much about the environment, including the likelihood of permanent environmental harm is technically uncertain to predict. The principle is that if there is a possible significant environmental harm, we will prevent that harm even if we cannot scientifically prove the certainty of that harm. The logic is that it is easier to prevent than to rectify environmental harm.

The basic principles can be traced to a number of international developments, notably international conventions and treaties. For example, in the case of the Precautionary Principle (Meurling , 1998):

- 1st (1984), 2nd (1987) and 3rd (1990) International Conferences on the Protection of the North Sea. The 2nd and 3rd conferences highlight the entry of the precautionary principle into official use.
- 1985 Vienna Convention for the Protection of the Ozone Layer.
- 1990 amendments to the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer.
- 1990 Bergen Declaration on Sustainable Development.

- 1991 Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa.
- 1992 Rio Declaration on Environment and Development.
- 1992 United Nations Framework Convention on Climate Change.
- 1992 Convention on Biological Diversity.

These international developments are reflected in local policy frameworks at both Federal and State levels such as:

- National Strategy for Ecologically Sustainable Development
- 1992 Intergovernmental Agreement on the Environment (1992 IGAE)
- National Greenhouse Response Strategy
- National Forests Policy Statement
- National Strategy for the Conservation of Australia's Biological Diversity
- National Water Quality Management Strategy
- Commonwealth Coastal Policy
- Wetlands Policy of the Commonwealth

The existence of a political commitment, however, does not mean that the courts will honour the commitment. The courts are free (by virtue of the separation of powers) to interpret the law with or without regard to the underlying policy intention. It is the courts which partially mediate what "messages" about expected standards are communicated to the community. In this way they also partially determine the responsibility standards the community will become educated to.

The pattern of reliance on the law for the development of standards discussed above is traditional in Western democracies. However, over recent decades a new standard setting mechanism has evolved: The voluntary standard, operating at both a domestic and international level. Whilst ostensibly outside the legal regulatory regime, such standards represent the creation of a network of contractual obligations to comply with the standard, generally in return for certification. This new pattern of extrinsic regulation, voluntarily adopted by corporations, was most clearly formed by the ISO 9000 Quality Standard. The most significant international environmental standard of this kind is ISO 14000, created by the International Standards Organisation[26].

A new systems path is being pioneered by these voluntary standards – especially in relation to ISO 14000.

- Corporations and governments determine that a voluntary code or standard is desirable (often as an alternative to regulation), and create this form of collective self regulation.
- A process is set up, and a self regulatory scheme is created. "Membership" is voluntary. The main cost of membership is generally compliance with the scheme.
- Pressure emerges to make all relevant corporations compliant. That pressure may be from regulators or from the adherents themselves, from environment groups or from international trade negotiations. It can also come by virtue of

[26] The overall approach is explained by the International Standards Association at http://www.iso.ch/. Details of the rules can be obtained at: http://www.iso.ch/9000e/14kbusy.htm.

economic advantages being conferred with accreditation such as preferred purchasing (by government or by leading corporates committed to the standard).

- A number of elements then can be expected to come into play. These will eventually provide a form of legal status to the voluntary code. It can be expected that:
- legal disputes will arise under which the legitimacy of accreditation, or the meaning of accreditation, will be contested in court;
- claims about the right to be accredited, or the potential to be struck off, will arise;
- common law claims, such as negligence, will begin to use this "best management practice" as the standard to be applied to all;
- legislatures will begin to appropriate the standard within legislation, to ensure minimal standards are met by all.

In relation to ISO 14000 some of these processes are in train, but it is early days yet. A detailed examination of the state of these developments (as at 1999) is found in the report "A National Materials Accounting Strategy" (Martin & Verbeek, 1998).

The development towards mandatory status of ISO 14040, even at its barely formalised status, is highlighted in that report:

- It is already reflected in a growing number of government and private sector preferred purchasing arrangements;
- It is reflected in WTO arrangements for permissible trade barriers;
- Industry groups are seeing it as forming the basis for imposed requirements on their competitors; and
- Technical disputes are arising as to the proper meaning and application of the rules.

It only remains to be seen when (rather than whether) commercial disputes will arise over this standard, leading to its entry into the formalised lexicon of the law.

3.6.2 Environmental law and Statute interpretation

The policy frameworks having been set, and the statutes created to reflect these frameworks, the courts now enter the equation. Courts apply statutes, but courts have more than the words of the statute in mind when they make a judgement. Frequently the situations in which the statute is applied contains complexities, like conflicting requirements of other statutes, or policy considerations which make the "black letter" application of the words of the statute inappropriate. Courts exercise the freedom provided under the constitutional separation of powers between parliament and the courts. Sometimes they interpret statutes in ways that do not reflect what parliament intended. Our discussion here is a summary of cases we have reviewed. A more extensive discussion, including descriptions of the cases, can be found in Attachment 4.

Law operates at a number of levels within the system. The most obvious is statute where society, through the legislature, creates enforceable rules to govern behaviour. Regulations have their power in application of rules through court judgements, and through practical translation into behavioural standards that provide important information for decision making in the community.

The effects of laws on decision making and the effects of community preferences on law making is only part of the social change equation. Different fields of law interact to create new principles[27].

These mechanisms are interlinked in a myriad of ways including information flows, interpersonal relationships, and the movement of people. Our particular focus is

- The interpretation of parliamentary standards through the court system and how this begins to develop and refine the regulation of behaviour;
- The reflection of both parliamentary and inter-partes standards as establishing standards of care in torts such as negligence, which represents a second level of incorporation and refinement of environmental concepts and the creation of new standards;
- The reflection of parliamentary and judicial standards in inter-partes agreements, including contracts and collective codes; and
- The adoption of parliamentary and judicial standards in the self-regulatory systems of members of the society.

Forms of regulation

Parliamentary regulation is statute.

Judicial regulation by the court s includes the effects of civil claims under torts, or equity. These have their systemic effects largely through the operation of media and communications, education, and the economic system (through pricing certain behaviours as risk, through the operation of economic mechanisms such as insurance, and through regulating access to and therefore the price of certain environmental utilities).

Inter-partes regulation includes mechanisms created by contract or by other consensual mechanisms. These include the operation of industry associations, group norms, and collective arrangements such as industry standards, as well as person to person contract.

Self regulation is the province not of the courts and the legal system, but of educators and moralists.

3.6.2.1 Precaution and sustainability

Judges have found the precautionary principle unworkable. This principle has not been applied because it does not specify directives or obligations. The precautionary principle has been found to apply to property development if the developer cannot establish compliance with policy requirements. In general, however, precaution about environmental damage is a concept with which the courts are less comfortable than dealing with economic rights of property owners.

The underlying focus of policies for sustainability is to ensure that the economic interests of those who draw on the environmental

Peter Wells from the NSW EPA noted that there are real problems of application of sustainability. Exactly how does one measure and give advice about sustainability? Giving simple messages such as: reduce waste, cut down on the amount of water used, limit emission of carbon dioxide, only deals with part of the sustainability message. The more important part is to look at the integrated nature of the problem, and there are no bureaucratic systems to do so. Taken by the themselves, many projects are unsustainable and should not be allowed to continue. The practical realities are, however, that there are second and third order affects. Often the issues are about the "net effect" of developments taking into consideration related projects.

[27] A well known phenomenon by students and practitioners of jurisprudence, but is not well understood by the broader community

commons do not lead them to deprive future generations of those environmental resources. On the basis of the cases, sustainability is generally a term applied with narrow, economic meaning by the courts.

But these are early days. This narrow view is a reflection of the ambiguity of the concept when applied to particular situations. The courts are judging individual cases, where the results of their decisions can impact on the livelihood of many. A concept that is useful in political debate or in policy formulation may be too imprecise for application by the courts. Only through refinement do such concepts secure sufficient specificity to be practical in judgement.

This incremental refinement (and the early failure to reflect what seems to be clear policy directives) is not unique to environmental concepts. In the early days of the Trade Practices Act, the courts had a similar difficulty in translating concepts suitable for economic policy into concepts of sufficient specificity for application in judgements . It took over a decade of experience for the courts to come to grips with concepts of market and competition. It may take them as long to come to grips with the precautionary principle.

> There are plenty of…cases…where costs are distributed to people against their will, and where they have no legal or other recourse because of a combination of difficulty in measuring the loss and the lack of a legal regime to sheet home losses to those causing them more or less indirectly…One objection to coming up with this problem is: It is quite unrealistic to expect precise measurements of anything so vaguely specified as one's right to clean air, or one's loss of self-respect through being unemployed.
>
> Precise measurement is rarely relevant to action. As is well-known in probability theory, a very rough estimate is all that is needed in most cases. I do not know the precise risk of a crash when I get on a plane…what is often needed is not so much a precise measurement, as a solid minimum. If I can show that an environmental good is worth at least a certain amount, that is enough to get its claims "on the table", even if there is no hope of a precise measurement.
>
> *Source: James Franklin.*

3.6.2.2 Indirect translation of law into action through administration

Many administrative decisions have environmental implications – town planning, rezoning, licensing, resource access and so forth. It is to be expected that these decisions will increasingly be influenced by sustainability considerations. On the evidence to date, the courts are more likely to support the interests with which they have substantial experience – economic interests and the rights of administrators to administer, than newer interests concerning precaution, sustainability and intergenerational equity. It may be the case that as a tradition of environmental law emerges, with the community's continuing concern for such matters, the court will develop a similar comfort with environmental concepts.

Many of the ways in which environmental law principles are translated into action are not by direct actions involving effected communities. Often the most powerful effects are indirect, through shaping the decision processes (and criteria) of the administrative bodies which in turn deal with the citizen. However, even here, it is far from clear whether it is environmental principles which prevail, or legal respect for the bureaucracy. Sometimes, laws designed to protect natural values can be harnessed in an attempt to shift the political power of communities. The pattern of judgements is one of preservation of the freedom of the administration, rather than highlighting the environmental interest, although courts have intervened to facilitate an outcome

Administrators are typically precise in the way in which they reflect the decisions of the courts in procedures. It is to be expected that they will precisely reflect how

the courts interpret these pivotal concepts. The courts have been creative in how they have sought to reconcile environmental and economic interests. In doing so they have begun to walk down a path in which economic interest is arguably paramount over environmental interest, even when considering the meaning of sustainability.

3.6.2.3 Environment and human rights

Environmental concepts and economic/social concepts are not limited in their application to disputes between developers and anti-development lobbies. Environment and human rights linkages are being pioneered in the Australian courts (as they have in Canadian and other parallel jurisdictions to Australia). These human rights based concerns are creating new environmental rights, and in doing so are creating fundamental new concepts of property rights. Most striking is the finding of a new form of property right in native fauna, which could eventually be the basis for new legal developments. Such matters as rights to cell lines, flora, natural medicines and the like could eventually turn on these rights that are now being identified.

The Mabo decision was a battle for land rights, as a means for protecting the social and economic interest of a disadvantaged community. Respect for the environmental and cultural meanings of the land was at the heart of the claim. But as with many social system issues, matters are rarely as simple as they might initially seem. Some cases have highlighted the ways in which the recognition of property rights has been used as an alternative basis to secure protection of environmental values. It has also been used as a basis for indigenous people to circumvent the constraints of laws designed to protect environmental values (such as taking protected fauna).

3.6.2.4 Environment and consumers

Property rights are one mechanism through which issues of environmental importance can be considered by the court, but not the only way. Laws designed to protect consumers can be used to protect environmental values. Deception in relation to environmental claims is actionable under the Trade Practices Act. This innovation is likely to come to prominence once environmental certification and environmental marketing (such as under ISO 14000) become more evident in commerce.

The meanings of 'environment' are many. One of these relates to environmental health. The juxtaposition of environmental health and anti-smoking concerns, with the common law and the new "unconscionable conduct" elements within the Trade Practices Act, has opened the way to new classes of environmental action, but judgements have not been promising for consumers with environmental concerns.

Environmental law and human rights are natural bedfellows. Many of the issues of rights are concerned with the right to use, or to limit use, of the environmental commons. Others are concerned with the consequences of the use

On the link between environmental law and social benefits, Terry Leahy comments:

A key problem for environmentalists is that almost anything they do to successfully regulate environmental outcomes will impact most heavily and adversely on the working class. For example a serious carbon tax is going to have more impact on the family budget in terms of the cost of getting to work relative to their whole income. They are in a more difficult position if they are thrown out of work and so on. They would and do take a dim view of their opposition to environmental regulation being stigmatized as selfishness, since for them their resistance is always partly a class based opposition to middle and upper classes who have selfishly taken a disproportionate share of society's benefits.

or management of property. Overseas experience suggests that the area of collective rights will expand markedly, spurred on by the availability of class actions, contingent fees, and civil rights law. The mechanisms that will be used will not by any means be restricted to environmental laws. The combination of class actions and a host of torts or statutory enactments (such as intellectual property rights, administrative rights and trade practices laws) will open a plethora of opportunities for engagement within the courts on rights to use the environmental commons.

3.6.2.5 Environmental law and inter-partes regulation

Thus far we have illustrated ways in which environmental considerations have become the subject of the legal system, and some of the ways in which the judicial system is dealing with them. The instances have generally illustrated collective rights, but rights of access to the environmental commons are at the heart of economic activity – particularly extractive and primary production. It ought not to be surprising to see a myriad of issues of environmental rights infiltrating inter-partes relationships. Contracts are the prime legal mechanisms for the creation and protection of rights inter-partes, but there are many other mechanisms in tort or equity.

One such right found in the courts is the right to protect your land from adverse flows from neighbours, immediate and further afield – such as upstream effects on waters you draw on.

The right to secure the value from the use of land is at the heart of private property. There are many cases where exploitative rights are considered by the courts, under a range of legal categories – contract, misleading and deceptive conduct and the like. Such cases also show the intersection between these matters and legislation for the protection of the environment.

In most cases, the norm is that within the value that is received with land are exploitative rights. If these rights do not exist or are compromised, either by legislation or by some physical constraint, then one can anticipate contractual disputes. These disputes may in turn bring other fields of law (such as negligence, Trade Practices, or other claims in equity or tort) into play.

But it is not only the exploitative values of the land that can be in contention inter-partes. Information about environmental values has economic value, and can be a rich source of contention.

In the inter-partes cases we reviewed, a common feature is the attempt to extend the meaning of well-established legal principles, to encompass the protection (or appropriation) of the economic value of environmental resources. The tort of negligence is one where the courts are consciously open to the extension of the categories where protection will be available. The underlying tests of duty, breach and damage, with their reliance on foreseeability and reasonableness, are open to this extension. The laws of negligence, for example, have been extended to encompass the growing significance of environmental utility, and the consequences of environmental degradation and pollution.

Courts have found that a Council has a common law duty of care beyond that imposed by the Environmental Planning and Assessment Act and that the duties of authorities are not limited to compliance with official standards, particularly when human health is at risk. However, where the consequence is purely economic loss, (and where administrative law safeguards are available to the authorities), such extensions of environmental responsibility by the courts are less likely to take place.

The liability of government for injury to citizens due to pollution of water has been found not to be unlimited. Even when there is direct harm from environmental hazards, the courts rely on the same general standards of proof for negligence as in other instances. Economic loss from pollutants, however, are recoverable.

A number of environmental policies have required compensation payments, particularly for the loss of rights associated with land. Others establish economic incentive systems to encourage particular behaviour, such as recycling. In addition to administrative law claims for compensation, disputes as to who is entitled to compensation can arise. The creation of tradeable rights for the purpose of achieving environmental objectives has spawned a series of legal disputes, both administrative and contractual, in relation to these rights.

The field of inter-partes economic obligations based on protection of environmental values is expanding. This reflects the systemic effects we have documented.

3.6.2.6 Environmental law and self-regulation

Our analysis shows that environmental issues being dealt with have as yet unclear rules of application within the law. Legal concepts from a range of areas are being brought to bear to define new legal rights.

Based on the way in which other fields of law have evolved, we ought expect that the courts will become increasingly comfortable with finding for environmental rights, as they deal more frequently with the concepts. We ought to expect that the legal status of the environment will increase, and the range of legal actions that will develop out of this will proliferate.

It seems likely that we will see new concepts of property rights emerging from environmental law and related litigation.

How this will all translate into community values is difficult to say. However it seems likely that the law will be a force in translating vague concepts of environmental 'goodness' into more specific concepts of individual and collective environmental rights.

3.7 Improving the impact of natural resource management

What we have described in Part 3 is an unfolding of a new set of standards into the social system we described in Part 2. The behavioural models we use tell us that the most effective standards are those that are part of the dominant culture of the society, the culture of organisations and the self-standards of individuals.

Our analysis of the regulations detailed in Attachment 4, show that regulation is strategically directionless, characterised by episodic intervention and a lack of processes of planned refinement and development.

A recent study by the Profit Foundation (Martin and Verbeek, 1999) for the creation of a National Materials Accounting Institute (IMAS) highlighted the potential of ISO 14040 as a mechanism for both improved trade competitiveness and improved environmental compliance reporting. Major industry groups such as the Aluminium Council indicated that they wanted to embrace ISO 14040, and would welcome environmental reporting to government that was consistent with the data requirements for ISO 14040. They highlighted that the State of Environment reporting as it stands represents a redirection of resource that is inefficient.

A more sophisticated regulatory strategy would reflect three characteristics.

- Synergy: Legal regulation *per se* carries with it economic inefficiency (proposition 10. This is unavoidable. Legal regulation constrains the actions available to entrepreneurs, causing a pseudo 'taxation' of the economic system. However, the extent of this impost is dependent on the degree to which the law does (or does not) act synergistically with other mechanisms for regulating behaviour, including culture, market mechanisms, technology and the like.
- Rationality in regulation is not a question of wording, but rather the extent to which regulations create incentives that shape behaviour towards desired ends. Law can create perverse incentives, and sometimes the more that the law is enforced, the greater the perversity of the outcome. For example, arguably legal mechanisms used to control land clearing have led to farmers increasing their rate of clearing, and increasing licensing requirements have led to greater covert dumping of pollutants. Human behaviour is multi-facetted, contextually driven and reflective of value systems, which may seem "irrational". Successful law making requires understanding of these elements.
- Elegance: The proliferation of environmental regulation, and its relatively clumsy evolution, is a reflection of a lack of elegance in design. To illustrate, much environmental reporting (such as State of the Environment Reporting) requires industry to create data structures which have no relationship to information required by management. The likely result is resistance and poor compliance. Often environmental regulation seems to assume the existence of infrastructure which is not available at the time. The most salient example is the introduction of mandatory recycling in Germany. Infrastructure deficiencies made the legislation impractical, leading to the evolution of an industry led "green dot" programme as an alternative. Frequently these infrastructures have long lead times before they can be available. Whilst in this regard the law often leads the creation of innovations (such as improved pollutant control technologies), the consequence is diminished effectiveness of regulation.

  Many of our regulatory mechanisms are detailed, requiring complex evidence for administration. This in turn requires sophisticated policing mechanisms and sufficient policing resources. The absence of such resources – especially in times of "small government" – means that the structure is intrinsically weak. The traditionally weak regulation of fisheries and estuarine habitat is an illustration of such a NRM problem.

  There are illustrations of more elegant approaches. The apocryphal tale of the US State, which made the cornerstone of its water quality regulation that industry along its rivers had to take their input water from just below their effluent output pipe, highlights this logic. At a more prosaic level, the combination of self-regulatory codes, contestability by the community, and trading rights, all reflect increasing sophistication.

To build in synergy, rationality and elegance, we must place regulation and its promulgation in the social system in which it operates. We must, in effect, understand what/who we are trying to impact and the characteristics of the entity/entities.

The research agenda we propose is one that looks for the means of integrating legal regulations with other means of behaviour control in society. Such an integration is especially important in Australia where there is resistance to government imposed regulation and corresponding reluctance to legislate.

From our review of current problems with the implementation of natural resource law, we recommend a number of research questions, listed in box 3.1.

Box 3.1: Research questions

- How to translate principles and policies underlying natural resource law into tangible, practical and applicable tools. Section 3.5.2.1 noted the difficulty of implementing policy principles, such as precautionary principle and sustainability. There are efforts at present by organisations, such as the World Business Council for Sustainable Development, to provide tangible tools for application of these principles. There is an urgent need for further work on this issue.
- What are major institutional barriers to implementation of principles and policies underlying natural resource laws. Sections 3.4.2.2 discusses the interaction between government bureaucracies and courts and how these translate into interpretation and practical implementation of the law. Understanding the operation of this system and how it impacts implementation of the intent of the law would add to effective implementation of the law.
- How to achieve sustainable outcomes while maintaining social equity. Section 3.5.2.3 highlighted that social changes, such as those demanded by environmental legislation, often fall hardest on those who can least afford to make the change and who have the least power in society to protest and comment. This challenge requires a sensitive understanding of the needs of stakeholders and improved methods of including them in problem identification and solution. Research efforts aimed at understanding the nature of community participation should be supported.
- What is the effectiveness of self-regulatory methods of natural resource management? Section 3.5.2.6 noted the increasing use of self-regulation in natural resource management. We need to understand both the general of self-regulation and the context in which it most likely to be effective or ineffective.

Attachments

Attachment 1 - Extrinsic and Intrinsic Incentives *(Bandura, 1986, p240)*

Distinctions are often drawn between extrinsic and intrinsic motivators as though they were antithetical. What is commonly referred to as intrinsic motivation includes several types of contingencies between actions and their effects. These different patterns… arise through variations in the locus and inherentness of the outcomes of action.

In extrinsic motivators, the outcomes originate externally, and their relationship to the behaviour is arbitrary. It is not in the natural course of things that work should produce pay cheques, that good performances should evoke praise, or that reprehensible conduct should bring legal penalties. Approval, money, privileges, penalties, and the like are socially arranged, rather than natural consequences of behaviour. When these outcomes are no longer forthcoming, the behaviour declines unless it acquires other functional value.

Intrinsic motivation, as the concept is commonly used, comprises three types of relationships between behaviour and its effects. In one intrinsic form, the consequences originate externally, but they are naturally related to the behaviour. Touching a hot plate produces a painful burn, stepping out of the rain reduces wetness, watching television provides audiovisual stimulation, and striking piano keys generates melodic sounds. Because the sensory effects are intrinsic to the acts, they serve as highly effective regulators of behaviour.

In the second intrinsic form, behaviour produces naturally occurring outcomes that are internal to the organism. Responses that generate physiological effects directly rather than through the action of external stimuli, typify this type of contingent relation. Physical exertion creates fatigue, sustained tension of the musculature can induce painful headaches and other somatic effects, and relaxation exercises can relieve tension. Although most thoughts acquire their potential to activate bodily states through extrinsic pleasurable and painful experiences, cognitive activities can also produce physiological effects directly. Perturbing thoughts can generate aversive arousal; tranquilising thoughts can reduce it.

…In most activities from which people derive lasting enjoyment, neither the behaviour itself nor its natural feedback is rewarding. Rather, people's self-reactions to their own performances constitute the principal source of reward. To site an uncommon example, there is nothing inherently gratifying about playing a tuba solo. To an aspiring tuba instrumentalist, however, an accomplished performance is a source of considerable self-satisfaction that can sustain much tuba blowing…The evaluative consequences are internally generated, but the contingencies are arbitrary, in that any activity can become invested with self-evaluative significance. What is a source of self-satisfaction for one person may be devalued or of no self-consequence for another.

Attachment 2 - Contributors to this report

We broadcast our first draft of this model widely through several email lists as well as through personal contacts, inviting comment and participation.

We greatly appreciated contributions to the report by the following people:

- Stephen Bignill – Clean Hunter Centre
- Christine Bourne – SEDA
- Peter Davies – Department of Sociology, University of NSW
- James Franklin - School of Mathematics, University of NSW
- Christoper Irons – Water Research Foundation of Australia
- Terry Leahy – Department of Psychology, University of Newcastle
- David Patterson – School of Biological Sciences, University of Sydney
- Duncan Paterson – Australian Ethical Investment Ltd
- Roberta Ryan – Department of Sociology, University of NSW
- Peter Wells – NSW EPA
- Alan Woodward - Twyford Consulting

Contributions varied from sending us relevant documents to extensive interviews and participation in group discussions. Throughout the document we have added comments (in boxed text) to illustrate or emphasise issues raised. Here, we provide a synopsis of comments made on an earlier exposure draft.

General comments

A number of people pointed out that the urgency of the need for better resource management was not sufficiently highlighted in the document. The dollar costs of reparation and monitoring was underplayed. Nor was there sufficient emphasis on the environmental urgency of the problems facing humanity.

Theoretical orientation

A number of reviewers commented that they had never considered the problem from such a holistic view and appreciated the perspective. There was a degree of discomfort with the contextual nature of the modelling we proposed. Some contributors wanted more definitive statements about options, especially options given the urgency of the situation to take strong action. Our argument is that until environmental management is considered in a contextual way, we are unlikely to increase its effectiveness, especially given the urgent need for society to deal with resource management.

There was a degree of discomfort with the amoralistic stand of the model. It neither prescribes change nor makes normative statements about change. Reviewers argued that, given the imperative for change in natural resource management, firmer guidelines are necessary. We do not deny the imperatives. Available data strongly points to the need to better manage natural resources. The question we seek to answer is how best to carry out the change. The model we advance is descriptive of

society-environment interaction. From the understanding we derive from the model, we believe we can take the further step to obtain/research background information to more effectively implement changes to natural resource management than has been carried out to date.

We have grouped other issues into the list below. We reviewed each of these issues to consider how and whether our model had been deficient in dealing with them. The comment provided in italics is our response. In addition, we have used feedback from people in highlighted boxes throughout the main body of the report.

- There were questions whether the model we advanced was the most appropriate one given the task at hand. Several other models explaining the effectiveness or lack of effectiveness of NRM regulations already exist, including those which emphasise community dynamics, social equity, classifications of laws, coercion and cooperation, and power relationships. Those who advanced a coercion/cooperation model were particularly concerned that not highlighting this issue would sanction the already endemic trivialisation of natural resource regulations they observed. Those concerned with social equity, believed the model did not take these issues into account.

  We reviewed a number of these models and acknowledge their validity. We have worked with a number of these models in the past. As we noted in Part 1 of this report, ultimately, consistency and depth of theory are the important components of a model. The model we propose utilises other well-established and researched theories to provide depth. Issues such as power relationships, organisational structures, psychology of individuals, social interactions, are dealt with in detail in these supporting theories. Researchers using the model we propose, do not need to re-visit these issues but can build on the work to respond to specific NRM questions,

- Complexity of the model troubled a number of respondents. Suggestions were that we should provide more overarching references, provide a better executive summary, provide more examples.

  We have extensively revised the final report to take heed of these comments. The topic, however, is inherently complex. We see little option than for those who seriously wish to address effective resource management issues to accept the fruitlessness of simplistic notions of human behaviour and change equations, and take on board the need to deal with more complex equations.

- The role of participation – such as encouraged in Agenda 21 - in the model was difficult to discern by a number of participants. They highlighted it as an important part of the education process.

  We agree with this proposition. Participation is an important ingredient in the psychology of individuals. Its effectiveness, however, will only be substantial when it is part of a total and integrated program.

- A number of people pointed out that the temporal dimension of natural resource management is not highlighted in the model. For this, they argued, typologies of legislation, which highlighted whether legislation was merely enshrining acceptable practice or enforcing entirely new concepts, were better models for decision-making regarding effective resource management.

  There is a strong temporal dimension in the model. The theories on human nature, on organisations and on society which underly the model spell out the temporal requirements for standards/values internationalisation, and for cultural changes. The rationale for the model is the need to take into account both the temporal nature of change and, very importantly, its integrated nature.

- There was concern that the model enshrined a social versus environment framework and that this would be unhelpful since environment is an integral part of social welfare.

  The model has a broad definition of environment which we hope we have made clearer. Rather than promoting the environment as separate from social welfare, the model highlights that it is the basis of welfare.

- The use of the word "society" was challenged. Society is not a coherent entity and does not have interests in the same way that an individual and an organisation might have.

  This point is acknowledged and tacitly acknowledged in the report.. Whereas behavioural strategies are considered – as are research needs – for individuals and organisations, the subsystem "society" is treated differently. Although cumbersome, we have, for lack of a more elegant form of description, held onto the concept of "society" to park those elements of the social system which are broader than individuals and organisations and in which the various institutions which guide behaviour of individuals and organisations – such as religious, political, economic, legal.

- The model proposed has a managerial orientation and the discussion has manipulative overtones.

  We make no apology for this overlay. We believe that the objective of this report is to find ways of making natural resource regulation more effective. It is not the task of the report to debate whether natural resource regulation is more or less important than other social imperatives.

Research agenda

Comments on the required research agenda varied widely. We have categorised, the suggestions:

- The call for improved information to support legal initiatives was made by a majority of reviewers. Without information, they argue, it is impossible to implement legislation. The requirement for information was made at several levels:
  - At the governmental level, the point was made several times that application of environmental legislation is often very hard. Measures and technology are often not available, or ill defined, to monitor or to advice about how to implement legislative requirements. The result is apparently poor and haphazard decision-making by bureaucrats. This situation that reduces the motivation of regulators to implement the law.
  - At the industry level, demand for information was to increase certainty. This is the other side of the coin to the uncertainty felt by governmental bodies charged with implementing legislation. It was pointed out that while industry players generally object to the impositions of legislation, they acknowledge its need. But once legislation is promulgated, what they require is clear guidelines for implementation and knowledge that all industry players will be similarly effected by the legislation (level playing field concept.
  - Also at the industry level, a call for information was to increase capacity for monitoring and for benchmarking, not only of the internal operations of organisation, but also against the performance of other organisations

and the industry as a whole. Various suggestions were made, such as implementation of environmental reports, data banks or accurate and up-to-date source information for, for example, life cycle analyses.

- At the economic level, how to put dollar values to environmental damage was highlighted as pivotal to better legal regulation. Or, in more positive terms, how to put dollar values on social benefits from care for the environments. Without appropriate techniques for valuing the environment, economic interest continue to override sustainability in administration of regulations.
- In relation to incentives, information is needed about subsidies, contracts and laws that foster behaviour contrary to the intent and letter of environment legislation. Reserve incentives are barriers to effective natural resource management.
- There is a need for research on the effectiveness of programs promoting better resource management. Monitoring strategies to test effectiveness should be built into legislation and other change efforts – such as education programs.
- At the wider economic level, it would be beneficial to understand the secondary and tertiary effects of the implementation of natural resource management practices.
- At the scientific level, there is a lack of skill in translating scientific data into information that can be used by decision-makers and problem solvers. in practical ways that will solve on-the-ground problems.

- How to most effectively resource implementation? Resourcing is a problem for all levels of society effected by legislation. Often environmental legislation does not only mean changing behaviour, but also making structural changes. Government departments, organisations, householders, are economically impacted by attempts to implement resource management practices. Resourcing is poorly considered in the way in which law is formulated.
- How to ensure that proper coordinating mechanism are put in place to implement legislation. It is important to ensure that the coordinating mechanisms for implementation complement the requirements of the problem, reflecting the nature of the problem, the types of infrastructure changes that might need to be made and the behavioural changes that need to take place.
- How to make the issues that legislation deals with relevant to individuals and organisations so they understand not only that they must carry out certain environmental tasks, but why they should carry out the tasks.

  Aligned with this research call is how to properly utilise participation, particularly of those who will be most effected by Natural Resource Management regulations, to create, implement and mentor laws.
- How to ensure that legislation reflects the temporal dimension of change. Successful change cycles through from information about resourcing issues to internalising behaviours about resources. Here typologies of which stage of the cycle (where, on the continuum of change, the legislation operates: towards entirely new concepts and structures, or, at the other end, making law already accepted practices).

Attachment 3 – summary of the status of law relating to natural resource use.

Australian Capital Territory

Air Pollution:
Environment Protection Act 1997
Water Pollution:
Environment Protection Act 1997
Noise Pollution:
Environment Protection Act 1997
Waste Disposal:
Building Services Act 1926 – Garbage Regulations;
Litter Act 1977;
Environment Protection Act 1997
Public Health:
Public Health Act 1982 – Public Health (General Sanitation) Regulations
Site Contamination:
Environment Protection Act 1997;
Public Health Act 1982 – Public Health (General Sanitation) Regulations;
Hazardous Chemicals and Dangerous Goods:
Dangerous Goods Act 1984
Radioactive Substances:
Radiation Act 1983
Conservation, Flora, Fauna and Soil:
Nature Conservation Act 1980;
Environment Protection Act 1997
Administration:
Environment Protection Act 1997;
National Environment Protection Council Act 1994

NSW

General:
Protection of the Environment Operations Act 1997;
Environmental Trust Act 1998;
Wilderness Act 1987;
Zoological Parks Board Act 1973
General Offence Statutes:
Protection of the Environment Operations Act 1997: Part 5:
Air Pollution:
Protection of the Environment Operations Act 1997 Part 5.4 (Offences – Air pollution);
Ozone Protection Act 1990:
Water Pollution:
Protection of the Environment Operations Act 1997: Part 5 (ss 120-123);
Sydney Water Act 1994;
Water and Environmental Planning Legislation Amendment Act 1997 (amends Water Act 1912 and Environmental Planning and Assessment Act 1979); Pesticides Act 1978
Marine Pollution:
Marine Pollution Act 1987 (amended by Marine Safety Act 1998; Maritime Services Act 1935;
Marine Safety Act 1998 (not yet commenced);
Maritime Services Act 1935 (to be repealed upon commencement of Marine Safety Act);
Marine Parks Act 1997.
Noise Pollution:
Protection of the Environment Operations Act 1997: Part 5.5 (Offences)
Waste Disposal:
Protection of the Environment Operations Act 1997: Part 5.6;
Local Government Act 1993 (amended);
Waste Minimisation and Management Act 1995 (licensing and offence provisions have been transferred into Protection of the Environment Operations Act 1997 Act);
Waste Recycling and Processing Service Act 1970;
Waste Minimisation and Management Act 1995.
Site Contamination:
Contaminated Land Management Act 1997;
Environmentally Hazardous Chemicals (EHC) Act 1985;
Unhealthy Building Land Act 1991.
Hazardous Chemicals and Dangerous Goods:
Dangerous Goods Act 1975 (to be amended by Occupational Health and Safety Amendment Act 1997 and Marine Safety Act);
Environmentally Hazardous Chemicals Act 1985 (amended, pt 5 repealed);
Ozone Protection Act 1990;
Pesticides Act 1978;
Road and Rail Transport (Dangerous Goods) Act 1997;
Agricultural and Veterinary Chemicals (New South Wales) Act 1994;
Factories, Shops and Industries Act 1962
Radioactive Substances:
Radiation Control Act 1990 (to be amended by the Offshore Minerals Act 1999, not yet commenced)
Mining:
Mining Act 1992 (Offshore Minerals Act 1999, Offshore Minerals Act 1999, Mining Amendment Act 1999 – none yet commenced);
Petroleum (Onshore) Act 1991;

Other natural resources:
Forestry Restructuring and Nature Conservation Act 1995;
Forestry Revocation and National Park Reservation Act 1996;
Forests and Flora Reserves Revocation Act 1996;
National Parks and Wildlife (Parramatta Regional Park) Act 1998;
Marine Parks Act 1997;
Pesticides Act 1978 (1999 Bill has been passed).
Conservation:
Aboriginal Land Rights Act 1983;
Coastal Protection Act 1948
Forestry Act 1916;
Heritage Act 1977;
Native Vegetation Conservation Act
Pla nning and research:
Environmental Research Trust Act 1990;
Environmental Planning and Assessment Act 1979;
Environmental Restoration and Rehabilitation Trust Act 1990;
Fisheries Management Act 1994;
Irrigation Corporations Act 1994;
Sustainable Energy Development Act 1995;
Land and Environment Court Act 1979;
Local Government:
Local Government Act 1993
Other Statutes:
Murray Darling Basin Act 1992
Planning approvals:
Environmental Planning and Assessment Act 1979; Local Government Act 1993
Transport:
Recreation Vehicles Act 1983;
Road and Rail Transport (Dangerous Goods) Act 1997;
Roads Act 1993
Protection of the Environment Operations Act 1997 Part 5.8: Offences – motor vehicles

Northern Territory

Air Pollution:
Ozone Protection Act 1990;
Public Health Act 1952
Water Pollution:
Prevention of Pollution of Waters by Oil Act 1980;
Water Act 1996;
Summary Offences Act 1996;
Public Health Act 1952;
Water Supply and Sewerage Act 1996;
Power and Water Authority Act 1995
Marine Pollution:
Marine Act 1981 (to be superseded by the Marine Act 1999);
Prevention of Pollution of Waters by Oil Act 1980:
Noise Pollution:
Summary Offences Act 1996:
Waste Disposal:
Marine Act 1999;
Litter Act 1996;
Public Health Act 1952;
Water Supply and Sewerage Act 1982
Site Contamination:
Hazardous Chemicals and Dangerous Goods, Dangerous Goods Act 1981
Radioactive Substances:
Radiation (Safety Control) Act 1978 (1999 Amendment Act);
Radioactive Ores and Concentrates (Packaging and Transport) Act 1980
Mining:
Mining Act 1980,1993;
Mine Management Act 1992;
Mine Safety Control Act; Petroleum Act 1984;
Territory Parks and Wildlife Conservation Act;
Uranium Control (Environment Control) Act 1993
Conservation, Flora, Fauna and Soil:
Parks and Wildlife Commission Act 1980;
Soil Conservation and Land Utilization Act 1969;
Territory Parks and Wildlife Conservation Act 1996;
Fisheries Act 1988; Heritage Conservation Act 1991; National Trust (Northern Territory) Act 1976
Administration:
National Environment Protection Council (Northern Territory) Act 1994;
Power and Water Authority Act 1995;
Conservation Commission Act 1980;
Environmental Assessment Act 1994
Local Government: Local Government Act 1993,
Local Government Grants Commission Act 1986
Development Approval and Planning:
Planning Act 1994; Building Act

Queensland

General Offence Statutes:
Environment Protection Act 1994
Air Pollution:
Environment Protection Act 1994;
Local Government Act 1993;
Health Act 1937;
Refuse Management Regulations 1983;
Environment Protection (Interim Waste) Regulations 1996;
Environmental Protection Regulations 1998 (ozone substances)
Water Pollution:
Environment Protection Act 1994;
Health Act 1937;
Fisheries Act 1994;
Marine Parks Act 1982;
Sewerage and Water Supply Act 1949;
Transport Infrastructure Act 1994;

Transport Operations (Marine Pollution) Act 1995;
Water Resources Act 1989

Marine Pollution:
Environment Protection Act 1994;
Marine Parks Act 1982;
Transport Infrastructure Act 1994;
Transport Operations (Marine Pollution) Act 1995;
Fisheries Act 1994

Noise Pollution:
Environment Protection Act 1994;
Environment Protection Regulations 1998;
Local Government Act 1993

Waste Disposal:
Environment Protection Act 1994;
Health Act 1957;
Sewerage and Water Supply Act 1949;
Health Act 1988 – Refuse Management Regulations 1983;
Local Government Act 1993; Transport Infrastructure Act 1994

Site Contamination:
Environment Protection Act 1994;
Local Government (Planning and Environment) Act 1990 (Schedule to Contaminated Land Act Summary);
Health Act 1957;
Local Government Act 1993

Hazardous Chemicals and Dangerous Goods:
Queensland Marine Act 1958;
Environment Protection Act 1994;
Transport Planning and Coordination Act 1994;
Transport Operations (Road Use Management) Act 1995;
Health Act 1957;
Local Government Act 1993;
Building (Flammable and Combustible Liquids) Regulation 1994;

Radioactive Substances:
Radioactive Substances Act

Mining:
Mineral Resources Act 1989

Conservation, Flora, Fauna and Soil:
Fisheries Act 1994;
Land Act 1994;
Queensland Heritage Act 1992;
Nature Conservation Act 1992;
Rural Lands Protection Act 1985;
Soil Conservation Act 1986

Administration:
Environment Protection Act 1994;
National Environment Protection Council (Queensland) Act 1994;
Environment Protection Regulations 1998

Local Government:
City of Brisbane Act 1924;
Local Government Act 1993;
Development Approval, Environment Protection Act 1994;
Integrated Planning Act 1997;
State Development and Public Works Organisation Act 1971

Other Statutes:
Murray Darling Basin Act 1996

South Australia

General Offence Statutes:
Environment Protection Act 1993

Air Pollution:
Environment Protection Act 1993;
Local Government Act 1934

Water Pollution:
Environment Protection Act 1993:
Pollution of Waters by Oil and Noxious Substances Act 1987
Local Government Act 1934
Public and Environmental Health Act 1987
South Australian Water Corporation Act 1994
Waterworks Act 1932
Marine Pollution, Environment Protection (Sea Dumping) Act 1989
Harbors and Navigation Act 1993
Pollution of Waters by Oil and Noxious Substances Act 1987
Water Resources Act 1997

Noise Pollution:
Environment Protection Act 1993
Local Government Act 1934

Waste Disposal, Environment Protection Act 1993
Public and Environmental Health Act 1987
Sewerage Act 1929
Local Government Act 1934
Water Resources Act 1997

Site Contamination:
Environment Protection Act 1993
Public and Environmental Health Act 1987
Local Government Act 1934

Hazardous Chemicals and Dangerous Goods:
Dangerous Substances Act 1979

Radioactive Substances:
Radiation Protection and Control Act 1982
Environment Protection (Sea Dumping) Act 1984

Mining:
Mining Act 1971

Administration:
Environment Protection Act 1993
National Environment Protection Council (South Australia) Act 1994

Local Government:
Local Government Act 1934

Development Approval:
Environment Protection Act 1993
Environment Protection (Sea Dumping) Act 1989

Other Statutes:
Water Conservation Act 1936
Murray Darling Basin Act 1993
Water Resources Act 1997

Tasmania

General Offence Statutes:
Environmental Management and Pollution Control Act 1994
Air Pollution:
Environmental Management and Pollution Control Act 1994
Water Pollution:
Environmental Management and Pollution Control Act 1994
Pollution of Waters by Oil and Noxious Substances Act 1987
Groundwater Act 1985
Sewers and Drains Act 1954
Water Act 1957
Water Amendment Act 1997
Waterworks Clauses Act 1952
Public Health Act 1962
Living Marine Resources Management Act 1995
Fisheries Rules (Validation) Act 1997
Marine (Consequential Amendments) Act 1997
Marine and Safety Authority Act 1997
Marine Farming Planning Act 1995
Marine Resources (Savings and Transitional) Act 1995
Marine Pollution:
Environment Protection (Sea Dumping) Act 1987
Pollution of Waters by Oil and Noxious Substances Act 1987
Living Marine Resources Management Act 1995
Fisheries Rules (Validation) Act 1997
Marine (Consequential Amendments) Act 1997
Marine and Safety Authority Act 1997
Marine Farming Planning Act 1995
Marine Resources (Savings and Transitional) Act 1995
Environmental Management and Pollution Control Act 1994
Noise Pollution:
Environmental Management and Pollution Control Act 1994
Waste Disposal:
Environmental Management and Pollution Control Act 1994
Litter Act 1973
Public Health Act 1962
Sewers and Drains Act 1954
Waterworks Clauses Act 1952
Mineral Resources Development Act 1995
Mining (Strategic Prospectivity Zones) Act 1993
Site Contamination:
Environmental Management and Pollution Control Act 1994
Groundwater Act 1985
Public Health Act 1962
Hazardous Chemicals and Dangerous Goods Dangerous Goods Act 1998
Sale of Hazardous Goods Act 1977
Environmental Management and Pollution Control Act 1994
Radioactive Substances:
Radiation Control Act 1977
Mining:
Mineral Resources Development Act 1995
Mining (Strategic Prospectivity Zones) Act 1993
Conservation, Flora, Fauna and Soil:
National Parks and Wildlife Act 1970
Living Marine Resources Management Act 1995
Fisheries Rules (Validation) Act 1997
Administration:
Environmental Management and Pollution Control Act 1994
National Environment Protection Council (Tasmania) Act 1995
Local Government:
Local Government Act 1993
Local Government (Building and Miscellaneous Provisions) Act 1993
Local Government (Building and Miscellaneous Provisions) Amendment Act Local Government (Building and Miscellaneous Provisions) Amendment Act 1998
Other statutes:
Waterworks Clauses Act 1952

Victoria

General Offence Statutes:
Environment Protection Act 1970
Air Pollution:
Environment Protection Act 1970
Health Act 1958
Local Government Act 1989
Water Pollution:
Environment Protection Act 1970
Pollution of Waters by Oil and Noxious Substances Act 1986
Coastal Management Act 1995
Fisheries Act 1995
Local Government Act 1989
Melbourne and Metropolitan Board of Works Act 1958
Melbourne Water Corporation Act 1992
Water Act 1989
Water Industry Act 1994
Marine Pollution:
Marine Act 1988
Pollution of Waters by Oil and Noxious Substances Act 1986
Environment Protection Act 1970
Noise Pollution:
Environment Protection Act 1970
Health Act 1958
Local Government Act 1989
Waste Disposal:
Environment Protection Act 1970
Health Act 1958
Melbourne and Metropolitan Board of Works Act 1958

Local Government Act 1989
Site Contamination:
Environment Protection Act 1970
Local Government Act 1989
Hazardous Chemicals and Dangerous Goods
Dangerous Goods Act 1985
Environment Protection Act 1970
Radioactive Substances:
Health Act 1958
Nuclear Activities (Prohibitions) Act 1983
Mining:
Extractive Industries Development Act 1995
Mineral Resources Development Act 1990
Mines Act 1958
Conservation, Flora, Fauna and Soil:
Catchment and Land Protection Act 1994
Administration:
Environment Protection Act 1970
National Environment Protection Council (Victoria) Act 1994
Local Government
Local Government Act 1989
Development Approval:
Planning and Environment Act 1987
Other Statutes:
Fisheries Act 1995
Murray Darling Basin Act 1993
Water Act 1989

Western Australia

General Offence Statutes:
Environmental Protection Act 1986
Air Pollution:
Environmental Protection Act 1986
Mines Safety and Inspection Act 1994
Water Pollution:
Environmental Protection Act 1986
Pollution of Waters by Oil and Noxious Substances Act 1987
Country Towns Sewerage Act 1948
Health Act 1986
Metropolitan Water Supply Sewerage and Drainage Act 1909
Waterways Conservation Act 1976
Water And Rivers Commission Act 1995
Water Corporation Act 1995
Marine Pollution:
Pollution of Waters by Oil and Noxious Substances Act 1987
Western Australia Marine (Sea Dumping) Act 1981
Environmental Protection Act 1986
Marine and Harbours Act 1981
Western Australia Marine Act 1982
Mining Act 1978
Noise Pollution:
Environmental Protection Act 1986
Waste Disposal:
Environmental Protection Act 1986
Health Act 1986
Metropolitan Water Supply, Sewerage and Drainage Act 1909
Country Towns Sewerage Act 1948
Radiation Safety Act 1975
Site Contamination:
Environmental Protection Act 1986
Health Act 1911
Local Government Act 1995
Mining Act 1978
Soil and Land Conservation Act 1945
Hazardous Chemicals and Dangerous Goods
Explosives and Dangerous Goods Act 1961
Western Australian Marine Act 1982
Radioactive Substances:
Radiation Safety Act 1975
Mining:
Mining Act 1978
Mines and Safety Inspection Act 1994
Conservation, Flora, Fauna and Soil:
Conservation and Land Management Act 1984
Soil and Land Conservation Act 1945
Wildlife Conservation Act 1950
Waterways Conservation Act 1986
Administration:
Environmental Protection Act 1986
Local Government:
Local Government Act 1995
Local Government (Miscellaneous Provisions) Act 1960

COMMONWEALTH LEGISLATION

General Offence Statutes:
Environment Protection and Biodiversity Conservation Act:
Protection of the Sea (Civil Liability) Act 1981
Air Pollution:
Ozone Protection Act
Air Quality Monitoring Act 1976
Marine Pollution:
Environment Protection and Biodiversity Conservation Act:
Environment Protection (Sea Dumping) Act 1981
Protection of the Sea (Civil Liability) Act 1981
Protection of the Sea (Powers of Intervention) Act 1981
Protection of the Sea (Shipping Levy) Act 1981
Protection of the Sea (Prevention of Pollution from Ships) Act
Protection of the Sea (Oil Pollution Compensation Fund) Act 1993
Great Barrier Reef Marine Park Act 1975
Sea Installation Act 1987
Waste Disposal:
Hazardous Waste (Regulation of Exports and Imports) Act 1989
Hazardous Chemicals and Dangerous Goods
Hazardous Waste (Regulation of Exports and Imports) Act 1989
Industrial Chemicals (Notification and Assessment) Act 1989
Industrial Chemicals (Registration Charge – Customs) Act 1997
Industrial Chemicals (Registration Charge – Excise) Act 1997

Industrial Chemicals (Registration Charge – General) Act 1997

Radioactive Substances:

Environment Protection (Nuclear Codes) Act 1978 (to be repealed by Australian Radiation Protection and Nuclear Safety (Consequential Amendments) Act 1998)

Atomic Energy Act 1953

Mining:

Environment Protection and Biodiversity Conservation Act:

Atomic Energy Act 1953

Environment Protection (Nuclear Codes) Act 1978

Minerals (Submerged Lands) Act 1981

Conservation, Flora, Fauna and Soil:

Environment Protection and Biodiversity Conservation Act:

Endangered Species Protection Act 1992 (to be repealed by the Environmental Reform (Consequential Provisions) Act 1999)

National Parks and Wildlife Conservation Act 1975 (to be repealed by the ERCP Act 1999)

Whale Protection Act 1980 (to be repealed by the ERCP Act 1999)

World Heritage Properties Conservation Act 1983 (to be repealed by the ERCP Act 1999)

Aboriginal Land Grant (Jervis Bay Territory) Act 1986 (to be amended by ERCP Act 1999)

Wildlife of Proposals Act 1982

Soil Conservation Act 1985

Australian Heritage Act 1975

Great Barrier Reef Marine Park Act 1975

Administration:

Environment Protection and Biodiversity Conservation Act:

Development Approval/Licences:

Environment Protection and Biodiversity Conservation Act:

Protection of the Sea (Shipping Levy) Act 1981

Other Statutes:

Murray Darling Basin Act 1993

Native Title Act 1993

Environment Act 1977 (to be repealed by Statute Stocktake Act 1999)

Natural Resources Management Act 1992

Aboriginal Land Rights in Northern Territory Act 1976

Biological Control Act 1984

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

Attachment 4 - Environmental law and statute interpretation

Courts are called upon to apply statutes. But courts have more than the words of the statute in mind when they make a judgement. Frequently the situations in which the statute is applied contain embedded complexities, like conflicting requirements of other statutes, or policy considerations which make the "black letter" application of the words of the statute potentially inappropriate. Courts exercise the freedom provided under the constitutional convention of the separation of powers between parliament and the courts. Sometimes they interpret statutes in ways that do not reflect what parliament intended.

For example in *Nicholls v Director General of National Parks and Wildlife* (1994) the precautionary principle was deemed too unworkable in deciding whether a fauna impact statement was inadequate for granting a licence to take of kill fauna in the course of forestry operations. And in *Greenpeace Australia Ltd v Redbank Power Company Pty Ltd and Singleton Council* the precautionary principle was held not to be legally binding because it does not specify directives or obligations.

Nicholls v Director General of National Parks and Wildlife (1994) 84 LGERA 397 (NSW Land and Environment Court) http://www.austlii.edu.au/au/cases/nsw/NSWLEC/1994/155.html This was an objector appeal under the National Parks and Wildlife Act 1995 (NSW) "against the granting of a licence to take or kill fauna in the course of forestry operations"[1]. The appellant argued that the fauna impact statement was inadequate. The court rejected this argument. Talbot J stated that "...the statement of the precautionary principle, while it may be framed appropriately for the purpose of a political aspiration, its implementation as a legal standard could have the potential to create interminable forensic argument. Taken literally in practice it might prove to be unworkable. Even the applicant concedes that scientific certainty is essentially impossible. [Meurling , 1999 #188, p31]	*Greenpeace Australia Ltd v Redbank Power Company Pty Ltd and Singleton Council* (1994) 86 LGERA 143 http://www.austlii.edu.au/au/cases/nsw/NSWLEC/1994/178.html In a dispute about the establishment of a generating works that would emit carbon dioxide, the issue was the application of the precautionary principle. Pearlman J (pp153-155 of judgment) stated "The Framework Convention, the Intergovernmental Agreement on the Environmental [sic] and the National Greenhouse Response Strategy outline policy objectives and responses to the problem of enhanced greenhouse effect, but they stop short of expressly prohibiting any energy development which would emit greenhouse gases. They are policy documents only, and they expressly provide that they do not bind local government .... It is important to bear in mind that the Framework Convention, the Intergovernmental Agreement on the Environment and the National Greenhouse Response Strategy do not constrain individual action. There are as yet no specific directives or obligations cast upon individual operators in the energy field."

However, in *Brooks Lark & Carrick v Clarence City Council* the court held that the precautionary principle may apply in property development if the developer cannot establish compliance with policy requirements [188].

Brooks Lark & Carrick v Clarence City Council (Bajgoric and 1997) TASRMPAT 61 (Tasmania); http://www.austlii.edu.au/au/cases/tas/TASRMPAT/1997/61.htmlThis was a refusal of application for subdivision. It related to the State Coastal Policy which drew on the precautionary principle,

Meurling (1999, p31 interpreted the judgement[1] as being based on the fact that "experts (were) unable to prove...that nutrients from the effluent disposal system would not have an appreciable effect upon ground water and a lagoon. The tribunal was unable to determine whether the nutrient emissions from the subdivision could comply with the requirements of the State Coastal Policy, which made explicit reference to the precautionary principle." The tribunal thus refused to approve the application.

Whilst in a different context, *Anderson v Trust Company of Australia Ltd* demonstrates that precaution about environmental damage is a concept is less comfortable to the courts than economic rights of property owners.

In *Anderson v Trust Company of Australia Ltd* (Supreme Court, Qld, Thomas J, 3 Feb 1994), Anderson succeeded in gaining an interlocutory injunction to have the Trust company remove stock, machinery and chattels, which were being kept on Anderson's farm property. In this case, Trust Company feared that Anderson was overstocking the property, which would result in severe degradation and irreparable harm to the land.

An expert spoke about the risk of degradation, and whether the land was overstocked or not, stating that there was a 'real and substantial risk' of erosion if the present stock were kept on the land for more than 30 days. However, another opinion stated that the land could comfortably support the present stock. There were a number of uncertain factors which were noted: whether the summer would be favourable or not, the increasing/decreasing size of the number of cattle.

The judge was not satisfied that the risk was substantial on the evidence. The judge decided that the mere circumstance of conflicting opinion evidence, and the speculative nature of the potential damage, were not enough to grant the injunction. He stated that "the present use may well be a reasonable one." (p4) and that "the primary reason upon which I dismiss it is that I am not satisfied on the material before me that there is a probability or a serious risk of harm to the land through the present usage." (p5) However, because of the close proximity to maximum reasonable use, the plaintiff, at the behest of the judge, undertook to inform Trust Australia of any increase in numbers of cattle, and also undertook to pay damage for any degradation.

The underlying intention of sustainability is to ensure that the economic interests of those who draw on the environmental commons do not lead them to deprive future generations of those environmental resources.

The *Bannister Quest Pty Ltd v*

In *Bannister Quest Pty Ltd v Australian Fisheries Management Authority* (1997) 48 ALD 53; (1997) 77 FCR 503 http://www.austlii.edu.au/au/cases/cth/federal_ct/1997/819.html, the concern was the interpretation of the Fisheries Management Act 1991which required the Authority to give equal weight to:

- Achieving ecologically sustainable development – s 3(1)(b)
- Maximising economic efficiency - s 3(1)(c)
- Ensuring accountability – s 3(1)(d)

The court's approach to interpreting ecologically sustainable development was to take this to mean a focus on the sustainability of the fishing *industry*- ensuring survival of fish stocks so that they can be harvested in the future

"The concern is limited to ensuring the biological sustainability of fish stocks and the preservation of the marine environment upon which those fish stocks depend." – Drummond J

"Section 3(1)(b), on its true construction, requires AFMA, in pursuing this objective in the performance of its functions, to limit its consideration to matters that relate to two things, ensuring the biological sustainability of fish stocks and ensuring the protection of the marine environment upon which those fish resources depend." – Drummond J

There was also a focus on avoiding fishing problems of the past, those problems being firstly, overfishing, and secondly, over-capitalising (too much equipment, etc, for what is required to harvest fish efficiently which is thus a waste of resources).

Australian Fisheries Management Authority case highlights the courts approach to this complex issue of balancing economic and environmental values.

The court's approach to interpreting ecologically sustainable development was to take this to mean a focus on the sustainability of the fishing *industry*- ensuring survival of fish stocks so that they can be harvested in the future. It is hard to see what this makes of the separate requirement of maximising economic efficiency - s 3(1)(c), for the approach taken by the court is to equate environmental sustainability with long term economic efficiency, making the former meaningless. It is also hard to see why Parliament would have inserted the separate requirement for sustainability if they had not meant it to be a balancing consideration alongside (rather than subsumed within) economic considerations.

On the basis of this series of cases it is only possible to say that the precautionary principle, even when embodied in policy or in the words of a statute, may have something of a lesser status than Parliament intended, and that sustainability may be a term with very narrow, economic management meanings.

But these are early days, and this lesser status is a reflection of the general ambiguity of the concept when applied to particular situations. The courts are judging individual cases, where (as in the cases above) the results of their decisions can impact on the livelihood of many. A concept that is useful in political debate or in policy formulation may be too imprecise for application by the courts. Only through refinement (by the courts and the legislature) do such concepts apply sufficient specificity to be practical in judgement.

This incremental refinement (and the early failure to reflect what seems to be clear policy directives) is not unique to environmental concepts. In the early days of the Trade Practices Act, the courts had a similar difficulty in translating concepts suitable for economic policy analyses into concepts of sufficient specificity for application in judgements. It took over a decade of experience for the courts to come to grips with concepts of market and competition. It may take them as long to come to grips with the precautionary principle.

The cases cited are all attempts to give effect to environmental concepts in considering the economic interests of individuals. They raise difficult problems of application of environmental concepts when there is no clear "wrongdoer". The situation becomes less muddy when the law provides clear liability guidelines, and where wrongdoing can be readily identified by objective evidence. *McLennan v Holden,* provides such an

McLennan v Holden [1999] SAERDC 83 http://www.austlii.edu.au/do/disp.pl/au/cases/sa/SAERDC/1999/83.html (South Australia, Environmental Resources and Development Court), applying the Environment Protection Act 1993 (SA) Sections 45(5), 82 and 127(1)(a)

The case concerned pollution of river by illegal disposal of oily mixture into stormwater drains by two employees of Holden. The workers disposed of the mixture in this way to save time and had disposed of the waste in this way before. However, this fact was not taken to be evidence of continuing criminal offences when determining sentence. Two separate offences were involved: First, the actual pollution of the environment. Second, Holden's contravention of a condition of their authorisation from the Environment Protection Authority, which was to properly advise their employees of the requirements of the authorisation (ie that they should not dispose of the mixture in the way that they did) and of the general environmental duty under section 25 of the Environment Protection Act. Holden pleaded guilty to both offences and was fined $20,000 and a conviction was recorded. No good reason could be found not to record the convictions (the reasons offered were the detrimental effect of Holden's report to its parent in the USA, and the claim that the offences were trifling). Holden's co-operation with the relevant authorities during the incident was taken into account, and the company was generally considered to be a good corporate citizen.

instance.

Many of the ways in which the environmental law principles are translated into action are not by direct actions involving affected communities. Often the most powerful effects are indirect, through shaping the decision processes (and criteria) of the administrative bodies which in turn deal with the citizen. However, once again it is far from clear whether it is environmental principles which prevail, or bureaucracy. The *Randwick City Council v Minister for the Environment* is perhaps the ultimate illustration of the juxtaposition of politics, bureaucracy and the use of environmental law to further non-environmental agendas. It shows the way in which laws designed to protect natural values can be harnessed in an attempt to shift the political power of communities.

Randwick City Council v Minister for the Environment [1999] FCA 1494; http://www.austlii.edu.au/au/cases/cth/federal_ct/1999/1494.html

The Federal Minister for the Environment, Robert Hill, made a decision that no environmental impact statement nor public environment report were required for the Long Term Operating Plan for the Sydney Airport. The Randwick and Woollahra City Councils applied for judicial review of this decision on grounds of error of law, procedural ultra vires, uncertainty, improper purpose, no evidence, failure to take account of relevant considerations, taking account of irrelevant considerations and unreasonableness. The trial judge found that none of the grounds of review succeeded on the evidence. The Councils appealed.

The appeal Court found that the Minister had acted correctly under the Administrative Procedures. An examination of the Administrative Procedures (general intent and specific interpretation) and examination of case law dealing with similar rules was the basis of this decision.

What was significant is that case, whilst founded on laws designed for environmental protection, the judgement was not concerned with impact on the natural environment. Issues of fairness vis a vis different communities were the heart of the matter, and the outcome was determined with regard to compliance with administrative procedure. Yet environmental law provided the foundation on which the community sought to base rights to fair treatment by a government that they felt had acted with insufficient regard to their lifestyle interests.

The case did go to appeal and the underlying issue was decided in the Minister's favour in *City of Botany Bay Council v Minister for Transport and Regional Development*

City of Botany Bay Council v Minister for Transport and Regional Development [1999] FCA 1495; http://www.austlii.edu.au/au/cases/cth/federal_ct/1999/1495.html Federal Court (NSW)

The Long Term Operating Plan for the Kingsford Smith airport was implemented following the Minister's (Robert Hill's) decision that neither environmental impact statement nor public environmental report were required. The redistribution of noise was believed by opponents to be an impact which would have "a substantial environmental effect on a community", a consideration to be taken into account by the Minister in making the decision. Amongst other things, the appellant contended that the Minister did not take into account relevant considerations – the subjective impact upon residents newly effected by the noise. This ground was rejected

The applicants claimed that the subjective impact of aircraft noise upon the community constituted evidence of a "substantial environmental impact upon a community" which, if so, must then be taken into account by the Minister according to para 3.1.2(a)(i) of the 'Administrative Procedures'. However, the court found that the Minister had taken into account the effect on the broad community and that this approach was sufficient. The court pointed out that this was judicial review, and that the merits of the decision could not be trespassed upon. The Minister had fulfilled the requirements of 3.1.2(a)(i).

This case is one of a series that are about defining the degrees of freedom available to the administration when faced with requirements for environmental protection. The pattern is one of preservation of the freedom of the administration, rather than highlighting the environmental interest.

The case of *Minister for Urban Affairs & Planning v Rosemount Estates P/L & Ors* highlights this general predisposition to preserve administrative discretions.

Minister for Urban Affairs & Planning v Rosemount Estates P/L & Ors
http://www.austlii.edu.au/au/cases/nsw/supreme_ct/96040127.html (NSW)

An open cut coal mine in the Upper Hunter Valley was proposed. This mine had the potential to generate employment and substantial export revenue. To reduce environmental impact, a new ridge line was to be created to screen the development from the township of Muswellbrook. Revegetation was also planned. The Muswellbrook Shire Council approved the development.

Rosemount Estate (a wine company concerned about protecting the amenity of its area and its related tourism activities) opposed the development. Rosemount commenced proceedings in the Land & Environment Court, and succeeded on the grounds that the development would "intrude into large parts of the surrounding countryside in that it will be visible to people going about their lives there" (and the finding that it would not do these things was manifestly unreasonable)

It was also claimed that adequate consultation with various groups had not taken place, and this claim had been successful in the court below.

The Court of Appeal came down in favour of the Shire Council's freedom to act. The Director had discretion as to which public authorities she consulted with. The court decided that it was not its role to consider whether the underlying State environment policies were 'inexpedient or misguided'. The EIS accompanying the development application was held not to be invalid with the judgement that "This Court will be reluctant to reverse a decision of the Land and Environment Court upholding the validity of an EIS, and has yet to do so although there have been a number of unsuccessful challenges."

Nevertheless, the court may intervene to facilitate an outcome as occurred in *CSR Ltd (t/as Readymix Group) v Coffs Harbour City Council.*

C S R Ltd (t/as Readymix Group) v Coffs Harbour City Council [1995] NSWLEC 146 L&ECt (NSW)
http://www.austlii.edu.au/au/cases/nsw/NSWLEC/1995/146.html

CSR sought approval to expand an existing quarry. The application for expansion was rejected by the Coffs Habour City Council on the grounds that there would be an unacceptable visual impact on the landscape, unacceptable dust and airblast overpressure, and that the roads were not sufficient for the expected increase in traffic. CSR objected to the refusal, and exercised its right to be heard under s 97(2) of the Environment Planning and Assessment Act.

The court considered the State Environmental Planning Policy 37 (continued mines and extractive industries), the Coffs Harbour Local Environmental Plan 1988 and the North Coast Regional Environmental Plan 1988. The possibility of increased urbanisation in the valley was also considered. Due to the limited likelihood of widespread urbanisation, there was not considered to be an adequate ground of refusal.

It was accepted that the region would require aggregate in the future, which the quarry could provide, and that the cessation of the quarrying would thus be a community cost as the community would have to transport aggregate from another area. Dust was considered to be a serious problem, but not one that could not be alleviated by such activities as watering the ground, which could be enforced with conditions on the development approval. The effect on visual impact was not considered to be great enough to warrant a refusal, and could be ameliorated by screen planting. Noise levels were not unacceptable.

The court participated in deciding which conditions should be placed on the approval, regarding noise, dust levels, traffic conditions and visual impact. Some conditions were left to the Council to draft.

The court did consider the concept of ecological sustainable development, but reflected a narrow (use that can be maintained) perspective on this.

Many administrative decisions have environmental implications – town planning, rezoning, licensing, resource access and so forth. It is to be expected that these

decisions will increasingly be influenced by sustainability considerations. On the evidence to date, the courts are more likely to support the interests with which they have a historical association – economic interests and the rights of administrators to administer, than newer interests concerning precaution, sustainability and intergenerational equity. It may be the case that as a tradition of environmental law emerges, and with the community's continuing concern for such matters, the court will develop a similar comfort with environmental concepts.

Administrators are often precise in the way in which they reflect the decisions of the courts in their procedures. It is to be expected that they will precisely reflect how the courts interpret these pivotal concepts. The courts have been creative in how they have sought to reconcile environmental and economic interests. In doing so they have begun to walk down a path in which economic interest is arguably paramount over environmental interest, even when considering the meaning of sustainability.

But environmental concepts and economic/social concepts are not limited in their application to traditional disputes between developers and anti-development lobbies. Environment and human rights linkages are being pioneered in the Australian courts (as they have in Canadian and other parallel jurisdictions to Australia). These rights based concerns are creating new environmental rights, and in doing so are creating some fundamental new concepts of property rights. Most striking is the finding of a new form of property right in native fauna, which could eventually be the basis for major new legal developments. Such matters as rights to cell lines, flora, natural medicines and the like could eventually turn on these rights that are now being identified.

The Mabo decision was a battle for land rights, as a means for protecting social and economic interest of a disadvantaged community. Respect for the environmental and cultural meanings of the land was at the heart of the claim for legal rights. But as

In Yanner v Eaton (1999) HCA 53http://www.austlii.edu.au/au/cases/cth/high_ct/1999/53.html High Court (from Queensland), the appellant had caught two crocodiles. He was charged under the Fauna Act (QLD, now replaced with the Nature Conservation Act) of taking fauna without any authority under the Act. The appellant contended that he was not guilty of these charges by virtue of the Native Title Act 1993 (Cth). This states that where any other Act purports to prohibit or restrict someone from exercising or enjoying certain prescribed native title rights, which include hunting and fishing, they are not prohibited from doing so (so long as the rights are not extinguished). The magistrate found the appellant not guilty.

An appeal followed. The Crown contended that hunting and fishing native title rights had been extinguished by s 7(1) of the Fauna Act, which stated generally that all fauna was the property of the Crown.

The majority (Gleeson CJ, Gaudron, Kirby and Hayne JJ) looked at what it meant that "all fauna was the property of the Crown" and specifically, what 'property' meant in that context. It was found that it did not mean absolute beneficial ownership, but rather a set of limited rights, which were determined according to what the original purposes of making fauna the property of the Crown were – eg for royalties in a burgeoning fur trade. These rights were limited to "rights to limit what fauna might be taken and how it might be taken, rights to possession of fauna that had been reduced to possession, and rights to receive royalty in respect of fauna that was taken (all coupled with, or supported by, a prohibition against taking or keeping fauna except in accordance with the Act 1975)". Thus, the native title rights on which the appellant relied were not extinguished by the Fauna Act (para 31). The appellant was allowed to hunt and take the crocodiles according to his native title rights, despite the prohibition under the Fauna Act. (para 40)

A different view was taken by two of the judges. The court dismissed the appeal. 5-2

Thus, the Qld Fauna Act (now repealed) does not prohibit killing of protected animals under native title rights. But more significantly, private rights to native fauna have been recognised

with many human system issues, matters are rarely as simple as they might initially seem.

> In *Lockhart River Aboriginal Council v Cook Shire Council* [1998] QPELR 344, the Cook Shire Council approved an application to use land on Restoration Island for a tourist resort. The issue before the court was "whether the proposal would represent an unacceptable intrusion into the traditional country of the Aboriginal residents of the Lockhart River Community." (p345)
>
> The court found that the proposal did not represent an 'unacceptable intrusion into an area where Aboriginal interests are strong, evident and dominant.' The court found that there was a general feeling of resentment in the community because they had not been sufficiently consulted about the proposal, and also because there would be an increase in non-indigenous people. However, these facts did not constitute an unacceptable intrusion.

The *Lockhart River Aboriginal Council v Cook Shire Council* and the *Yanner v Eaton* cases highlight the ways in which the recognition of property rights has been used as an alternative basis for attempts to secure protection of environmental values (unsuccessful in this instance), and then as a basis for indigenous people claiming freedom from the constraints of laws designed to protect environmental values

> *Phelps v Western Mining Corporation Ltd* (1978) 20 ALR 183; (1978) 33 FLR 327; (1978) ATPR 40-077. Mr Phelps sought an injunction against Western Mining Co (WMC), claiming that WMC had acted in a misleading or deceptive way in contravention of s52 of the TPA. Phelps was a member of the public unconnected with WMC, who was "concerned about the mining of uranium in Australia" (p183). He alleged that WMC was publishing misleadingly or deceptively on the subject of uranium mining, nuclear power, and energy needs amongst other things. The issue at this hearing was whether Phelps had standing to seek a declaration under s 80.
>
> The court found that Phelps did have standing because of "the fact that the essential nature of his suit is one for the protection of the public interest. In my view it is irrelevant whether an interest of his own is affected or not…" (p187).

Property rights are one mechanism through which issues of environmental importance can be considered within the court system. This is far from being the only way. *Phelps v Western Mining Corporation Ltd* illustrates how laws designed to protect consumers can come to be used in an attempt to protect environmental values. The court identified that deception in relation to environmental claims is actionable under the Trade Practices Act. This innovation is likely to come to prominence once various forms of environmental certification and environmental marketing (such as under ISO 14000) become more evident in commerce.

As mentioned at the outset, the meanings of 'environment' are multitudinous. One of these relates to matters of environmental health. The juxtaposition of environmental health and anti-smoking concerns, with the common law and the new 'unconscionable conduct' elements within the Trade Practices Act, has opened the way to new classes of environmental action. However the *Qantas Airways Ltd v Cameron* case in this regard is not promising for consumers with environmental concerns.

Environmental law and community rights are natural bedfellows. Many of the issues of rights are concerned with the right to use, or to limit use, of the environmental commons. Others are concerned with the consequences of the use or management of property. Overseas experience suggests that the area of collective rights will expand markedly, spurred on by the availability of class actions, contingent fees, and civil rights law. The mechanisms that will be used will not by any means be restricted to environmental laws. The combination of class actions and a host of torts or statutory enactments (such as intellectual property rights, administrative rights and trade practices laws) will open up a plethora of opportunities for engagement within the courts on rights to use the environmental commons.

In *Qantas Airways Ltd v Cameron* (1996) ATPR 41-487; (1996) 66 FCR 246; (1996) 145 ALR 294; NSW Federal Court, a number of passengers on Qantas flights had requested non-smoking seats. They were placed either in smoking designated seats, or in close proximity of such seats. They all suffered discomfort or ill health from the tobacco smoke. The trial judge awarded them minimal damages. Qantas challenged the finding of liability. The passengers (including Cameron) appealed on the basis that the trial judge failed to find unconscionable conduct, misleading or deceptive conduct, and failed to grant various declarations and injunctions. They also sought to increase the level of damages awarded.

The first issue was that of negligence. Both parties accepted that Qantas had a general duty of care to its passengers, due to its knowledge at the time of the flights of the potential health risk from, amongst other things, environmental tobacco smoke. The question was whether Qantas had taken reasonable precautions against these risks. It was held 2-1 that they had. Asking passengers whether they wanted a smoking or non-smoking seat was held to have been sufficient to warn passengers that smoking took place on the flight, and that they may be subject to the effects of it.

The minority of the judges thought that Qantas should have warned passengers of the potential risks of environment tobacco smoke, which could be aggravated in an aeroplane environment.

All judges upheld the trial judge's finding that there had been no unconscionable conduct. The court understood that Qantas was operating in a competitive environment with smoking and non-smoking customers. It had attempted to alleviate some of the discomfort that might be caused by offering both smoking and non-smoking seats. It did not show a lack of regard for conscience.

The trial judge had found that there had been misleading and deceptive conduct by Qantas advertising that customers could be allocated non-smoking seats, when in fact they might be placed in smoking seats. The majority found that for eight of the plaintiffs misleading or deceptive conduct could not be found since Qantas' acceptance of the requests for non-smoking seats was not a representation that non-smoking seats would definitely be obtained. Another of the plaintiffs had been told that he definitely had a non-smoking seat, when he in fact did not have one, which amounted to a misleading representation. However, causation was not established since it was not certain whether the representation encouraged them to stay on the flight which caused them ill health, rather than change to another flight. The last of the plaintiffs was thought to have a case in misleading or deceptive conduct, but this was not decided upon in this case as there were thought to be other issues which needed to be addressed separately.

Environmental law and inter-partes regulation

Thus far we have illustrated ways in which environmental considerations have become the subject of the legal system, and some of the ways in which the judicial system is dealing with them. The instances dealt

In *Qantas Airways Ltd v Mascot Galvanising (Holdings) Pty Ltd* 17/12/1998 SCNSW 3610/96, Supreme Court NSW, Qantas and Mascot Galvanising (MG) had lands adjoining one another. Qantas alleged that waste located on MG's land was entering Qantas' land through underground water flows. Qantas claimed nuisance and negligence, and sought an injunction and damages.

The basis of the case was continuing physical damage to property, rather than a substantial interference with Qantas' use or enjoyment of the land. The effect of the contamination upon the value of Qantas' land was considered. The court considered that it had been reasonably foreseeable since 1975 that the waste might infiltrate neighbouring land and that it had been possible for them to do something about it. An injunction was awarded but no damages. Negligence was not considered since Qantas had succeeded in nuisance.

with have generally illustrated collective rights, but rights to use and access the environmental commons are at the heart of economic activity – particularly extractive and primary production activities. It ought not to be surprising to see a myriad of issues of environmental rights infiltrating inter-partes relationships. Contracts are the prime legal mechanisms for the creation and protection of rights inter-partes, but there are many other mechanisms in tort or equity. The first case, involving Qantas again, *Qantas Airways Ltd v Mascot Galvanising (Holdings) Pty Ltd* illustrates this.

The right to protect your land from adverse flows from neighbours is not limited to immediate neighbours. The ancient right to the flow of water through the rivers on (or bounding) your property can serve as a launch pad for the protection of broader environmental values, such as is demonstrated in *Van Son v Forestry Commission of NSW*.

In *Van Son v Forestry Commission of NSW* (Supreme Court, NSW, Cohen J, 3 Feb 1995), the plaintiff relied on a creek for her water supply. Upstream of where she took the water from the creek, logging took place in the Mistake State Forest. On previous occasions the logging had caused erosion and consequent sedimentation in the plaintiff's water supply. She had obtained orders that measures be taken to prevent the erosion and sedimentation. Some planning took place before the next series of logging, but the contention of the plaintiff was that this was not effective, and erosion and sedimentation still took place.

The expert witnesses were in significant disagreement. The judge was of the opinion that none could be discredited. The plaintiff claimed that her common law riparian rights had been interfered with. However, it was held that these rights no longer existed because they had been replaced by legislation that did not enact a right to receive a continual flow of water from an upstream landowner. However, an action in nuisance succeeded, since the plaintiff had suffered a substantial interference with the 'ordinary comfort of human existence.' The Forestry Commission did not have statutory immunity in respect of liability under the tort because they had conducted the logging in an unreasonable way. Damages of $3000 were awarded to the plaintiff. The plaintiff requested that an injunction to force the defendant to carry

The right to secure the value from the use of land is at the heart of private property. The *E M & E S Petroleum Pty Ltd v Shimden Pty Ltd* case is representative of a vast number of cases where exploitative rights are considered by the courts, under a range of legal categories – contract, misleading and deceptive conduct and the like. It also shows the intersection between these matters and legislation for the protection of the environment.

In *E M & E S Petroleum Pty Ltd v Shimden Pty Ltd* 26/06/1995 SCNSW 2483/92, the parties entered into a contract for sale of a service station. The service station was in a residential zone, in which the development of service stations is prohibited. The continuing existence of the station depended on its being classed as an 'existing use' within ss 106 and 107 of the Environmental Planning and Assessment Act 1979 (NSW). The vendors had purportedly made representations that it was such an existing use. The plaintiff then attempted to rescind the contract on the grounds that it had been entered into the contract relying on false representations by the defendants.

This case represents the 'norm' of how environmental issues come into contention through contract. Embedded within the value that is sought to be received with land are certain exploitative rights. If these rights do not exist or are compromised, either by legislation or by some physical constraint, then one can anticipate contractual disputes. These disputes may in turn bring other fields of law (such as negligence, Trade Practices, or other claims in equity or tort) into play.

But it is not only the exploitative values of the land that can be in contention inter-partes, as the *Corporate Farming Pty Ltd v Eden Bay Pty Ltd* case illustrates. Information about environmental values has economic value, and can be a rich source of contention.

In the inter-partes cases above, a common feature is the attempts to extend the meaning of well-established legal principles, to encompass the protection (or

Armidale City Council v Alec Finlayson Pty Ltd [1999] FCA 330; (1999) 104 LGERA 9 http://www.austlii.edu.au/au/cases/cth/federal_ct/1999/330.html (cited in S Brown "Council Sued for Contaminated Land: Casenote" (1999) 5(1) LGLJ 24) is an illustration of a long line of negligence cases against local authorities over rezoning where there are significant environmental problems with the areas rezoned. These cases have spanned problems of geomorphology, contamination and movement over tip sites.

Armidale Council rezoned land from industrial to residential. The council had been aware since 1973 that the land was potentially contaminated – there had been a timber treatment plant on the site and the council knew that the occupiers had not run the plant with sufficient care and that there had been waste disposal on the site. It approved applications by Alec Finlayson Pty Ltd (AF P/L) to subdivide the land for residential use. AF P/L had no idea of any contamination (toxic chemicals). AF P/L entered into building contracts for the land, but it was subsequently revealed that the land was seriously contaminated. AF P/L sued the council for loss of potential profit, the cost of remediation works, and damage to reputation.

The court found that the council owed AF P/L a duty of care because of Council's knowledge of contamination, and knowledge of AF P/L's unawareness of contamination. The Council knew that the contamination could cause serious harm to potential occupiers and had statutory obligations to consider whether the land was fit for residential purposes under the Environmental Planning and Assessment Act 1979

It would have been easy for the council to conclude the land unfit for residential purposes – it had only to look at its own records

It was obvious that selling the contaminated land to purchasers would damage AF P/L's reputation and the council had a duty to keep AF P/L's economic interests in mind when deciding whether to grant the application

Damages of $1, 479, 576 were awarded, including $500,000 for loss of opportunity to earn profit.

In *Ryan v Great Lakes Council* [1999] FCA 177 Federal Court of Australia http://www.austlii.edu.au/au/cases/cth/federal_ct/1999/177.html the court considered whether a duty of care is owed by local council to oyster consumers for contraction of Hepatitis A. This case also considered Trade Practices claims (s74B and s74D), for implied warranties as to the fitness of goods sold for human consumption.

A number of people contracted Hepatitis A, which was traced back to Wallis Lake in NSW. The question was whether the council, the NSW government, and/or Graham Barclay Oysters (the oyster vendor) had breached a duty of care owed to these people

From expert evidence, it appeared that the standards that the NSW government set to ensure healthy conditions at oysters farms were low in comparison to standards used elsewhere in Australia and internationally.

It was found that the Council had a duty of care to minimise pollution in the lake, and that the duty had been breached, as there were certain testing procedures that they should have been using. These testing procedures were not required by statute, but nevertheless should have been used due to the Council's knowledge of the risk.

The State had a duty of care to the oyster manufacturers, which it had breached. It should have either "ensured the making of a comprehensive and competent sanitary survey or closed the fishery." (para 340).

Graham Barclay Oysters had also breached their duty of care to the people affected by Hepatitis A

appropriation) of the economic value of environmental resources. The tort of

negligence is one where the courts are consciously open to the extension of the categories where protection will be available. The underlying tests of duty, breach and damage, with their reliance on foreseeability and reasonableness, are open to this extension. The *Armidale City Council v Alec Finlayson Pty Ltd* and *Ryan v Great Lakes Council* cases survey the extent to which the laws of negligence have been extended to encompass the growing significance of environmental utility, and the consequences of environmental degradation and pollution.

It is interesting to note that in the *Armidale City Council v Alec Finlayson Pty Ltd case* the court found that Council had a common law duty of care beyond that imposed by the Environmental Planning and Assessment Act (as noted by Brown).

The *Ryan v Great Lakes Council* case highlights that the duties of authorities are not limited to compliance with official standards, particularly when human health is at risk. However, where the consequence is purely economic loss, (and where administrative law safeguards are available to the authorities), such extensions of environmental responsibility by the courts are less likely to take place.

Water Administration Ministerial Corp v Puntoriero Matter No CA 40367/96 (November, 1997) http://www.austlii.edu.au/au/cases/nsw/supreme_ct/unrep267.html NSW Supreme Court (Court of Appeal).
The plaintiff (Puntoriero) was a potato farmer who drew water from the irrigation system operated by the Water Adminis-tration Ministerial Corp (WAMC). The plaintiff's crops suffered damage from the herbicide atrazine. They lodge an action for negligence, in which they were successful, and were awarded jury damages of $1.8 million. WAMC challenged this finding on the grounds that they had statutory immunity, and that there was no duty to protect the plaintiffs from damage. The court found that WAMC was protected by statutory immunity according to s 19(1) of the Water Administration Act 1986.

The liability of government for injury due to pollution of water is not however unlimited. The case *Water Administration Ministerial Corp V Punteriero* highlights this reality.

Local government can seek redress for environmental harm caused by citizens, as shown by the case: *Gunnedah Shire Council v Hansen*.

Gunnedah Shire Council v Hansen (Supreme Court, NSW Powell J 12 Aug 1993) was an instance where a Council was blaming a ratepayer (Hansen) for damage caused by flooding to a road and road reserves. The Council alleged that the water doing the damage was being diverted from Hansen's land to the road and road reserves as a result of a bank that Hansen had erected to protect his land from floodwaters. The court found that the Council was laying excessive blame on Hansen. In fact, a large amount of the flooding damage had occurred as a result of various other land owners acting on the advice of the Soil Conservation Service, and were cutting down grasses which would have used excess water.

The effect on water flows of changes in land usage over the last 50 – 100 years were examined. The creation of roads higher than the plains meant that water was diverted, and would build up on one side because it could not pass the road until the water level was high enough. Fences became virtual ridges because of build-up of grass and dirt along the fence lines, further diverting the water. The elimination of vegetable cover and compaction of the soil lead to more water run-off and eventually to soil erosion and siltation.

But even when there is direct harm from environmental hazards, the courts rely on the same general standards of proof for negligence as in other instances, as illustrated in the case: *Kranich v Minister of Education.* Economic Loss from pollutants, however, are recoverable – as illustrated in *Losinjska Plovidba v Transco Overseas Ltd.*

Kranich v Minister of Education (1997) 190 LSJS 346 http://www.austlii.edu.au/au/cases/sa/SADC/1997/3590.html. South Australia District Court In this case the defendant had pesticide spraying done in some buildings which Kranich came into contact with. The foreman of the works had told Kranich that he should open windows in the morning and close them at night, and that the pesticides were perfectly safe. Kranich noticed an incredible stench, associated with the pesticide. Soon afterwards, he started to develop symptoms, including shakes and jolts, difficulty in focussing eyes, increasing lethargy, muscle pains and depression. Upon being examined by a number of specialists, it was determined that Kranich was suffering not from a physical condition caused by the chemicals, but by a psychogenic condition. Kranich sued the defendant in negligence. The court held that the defendant had a duty of care to Kranich, but that there had been no breach. The judge considered that it was not reasonably foreseeable that the foreman's failure to warn Kranich of the unpleasant odours, or to make sure that he was not subjected to them, would cause Kranich to suffer a psychogenic disorder.	*Losinjska Plovidba v Transco Overseas Ltd* (The Orjula) [1995] 2 LloydsRep 395 Queen's Bench was concerned with economic loss due to contamination. The plaintiffs, Losinjska Plovidba (LP) were charters of the boat Orjula, and the defendants, Transco Overseas (TO) were shippers. Containers of hydrochloric acid and sodium hypochlorite were being transported from England to Libya. During the voyage, heavy weather was encountered which caused the containers to leak and when the ship went to dock in Rotterdam, it was ordered to have the ship decontaminated. LP claimed against TO under contract and for negligence. They also claimed against the 2nd defendant for failing to properly lash, stow and/or secure the containers to withstand the ordinary risks of sea travel. The 2nd Defendant applied to strike out the points on the basis that there could not be any duty of care since there was no physical damage to the ship – only contamination which could be cleaned off; also that the claim was wholly or in part for economic loss for which there could be no duty of care owed to LP. The court held that the ship had suffered damage as the result of the contamination. "Relevant considerations are whether there has been "injury impairing value and usefulness" of the property in question, and the need for work and the expenditure of money to restore the property to its former useable condition is material." (p399) Also that it would be possible for the plaintiffs to claim economic loss for damage resulting from the contamination. Thus the application to strike out the plaintiff's statement of claim failed.

A number of environmental policies have required compensation payments, particularly for the loss of rights associated with land. Others establish economic incentive systems to encourage particular behaviour, such as recycling. In addition to administrative law claims for compensation, disputes as to who is entitled to compensation can arise. The *Studley Developments Pty Ltd v Department of Planning & Urban Growth* and *Le Ro Char Enterprises Pty Ltd v Can Recycling (SA)* (t/as Statewide Recycling) cases are illustrative of the range of legal issues that can arise as a result.

The case of *Studley Developments Pty Ltd v Department of Planning & Urban Growth* (1992) 76 LGRA 325; [1993] 1 VR 15 Supreme Court, Vic is an example of a dispute for compensation. Studley purchased land of which part was reserved for use as a main road. The contract of sale contained a clause that stated that the vendor of the land was entitled to all compensation in respect of the reservation. This was because the land had been sold for $1m, but was valued at $1.6m without the reservation. Studley developed part of the land. Five years after purchase, Studley applied for development consent which was refused on the grounds that the land was reserved for a public purpose. Studley claimed compensation for financial damage under the *Planning and Environment Act* because of the reservation. The authority claimed that no compensation was	*Le Ro Char Enterprises Pty Ltd v Can Recycling (SA)* (t/as Statewide Recycling) [1999] FCA 711 http://www.austlii.edu.au/au/cases/cth/federal_ct/1999/711.html This dispute provided a juxtaposition of the Environment Protection Act 1993 (SA), s 71 and the Trade Practices Act 1974 (Cth), s 45D(1) In SA, collection depots are required to accept 'Category B' recyclable bottles and pay $0.05 refund upon them. Le Ro would gather the empty bottles from SA and Victoria, for the purpose of collecting the refund. Coca-Cola (CC) and Cadbury Schweppes (CS) each owned 50% of Statewide Recycling (SR) and had nominee directors on the board. SR would collect the bottles from the various collection depots to which it would reimburse the $0.05 refunds and pay a handling fee. CC and CS paid SR a certain fee for this service. SR became aware that Le Ro was delivering bottles

payable because compensation had already been paid for the reservation, and the price Studley had paid for the land reflected the blight on the land. The court rejected Studley's claim on the basis that no one can recover twice for the same injury. The vendor had already recovered for the reservation of land, and the court held that Studley's application being refused amounted to the same deprivation – that Studley could not claim loss of potential for highest and best use development because they had already been deprived of it.	from Victoria as well as SA, and instructed the collection depots not to take any bottles from Le Ro (since SR believed it was not obliged to collect bottles from Vic). Le Ro sought an injunction to stop SR from disallowing the collection of bottles from Le Ro on the basis that SR was breaching TPA s45D(1). The argument was that CC, CS and SR could not act in concert to prevent Le Ro from providing goods or services to the collection depots in such a way that causes Le Ro's business substantial loss or damage. The court found that the evidence had failed to prove that CC, CS and SR were acting in concert.

The creation of tradeable rights for the purpose of achieving environmental objectives has spawned a series of legal disputes, both administrative and contractual, in relation to these rights. *Dukalskis v Minister for Environment & Heritage* is illustrative of these matters.

Dukalskis v Minister for Environment & Heritage [1998] SAERDC 475 (27 March 1998)
http://www.austlii.edu.au/au/cases/sa/SAERDC/1998/475.html

Environmental Resources and Development Court, South Australia, was an appeal against the refusal of the Minister to grant a Water Licence for certain land. One issue raised was the fact that the sale of the land was dependent upon the water licence being granted - this was a condition in the contract for sale. The water licence was refused under to the Water Resources Act 1997 (s 29 and objects of Act) because there was evidence of excessive depletion already. The court affirmed the Minister's decision

Self-regulation

Is the growth in environmental disputation being driven by the lawyers, or by the community? Revelations from the various environmental sciences are informing the community about hazards that were little understood in the past. The simple reality of increasing populations and 'crowding' in cities and industrial areas, along waterways, and elsewhere in our environment is increasing ecological interdependence. The magnitude of the consequence of individual or collective default in caring for the environmental commons is, therefore, increasing.

Our analysis shows that the issues being dealt with have yet unclear rules of application. Legal concepts from a range of areas are being brought to bear to define new legal rights.

What should we expect? Based on the way in which other fields of law have emerged and evolved, it would seem that we ought expect that the courts will become increasingly comfortable with finding for environmental rights, as they deal more frequently with the concepts. We ought to expect that the legal status of the environment will increase, and the range of actions that will develop out of this will proliferate.

It seems likely that we will see new concepts of property rights emerging from environmental law and related litigation.

How this will all translate into communal expectations is difficult to say. However it seems likely that the law will be a potential force in translating vague concepts of environmental 'goodness' into more specific concepts of individual and collective concepts of environmental rights.

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