Towards an Autopoietic

Perspective on Knowledge &

Organisation

By Robert Kay

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NO PART OF THIS THESIS HAS BEEN SUBMITTED IN ANY FORM FOR THE AWARD OF ANY DEGREE AT THIS OR ANY OTHER EDUCATIONAL INSTITUTION.

Robert Kay
October, 1999.
PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

and the best possible result has been obtained.
Executive Summary

In this thesis a number of disparate subjects and notions are drawn together in order to move toward a coherent perspective on the notion of an organisation and the way in which organisations may be seen to survive. The contribution of the work is in linking the use of autopoietic theory, with the notions of the learning organisation and knowledge management in order to produce a “frame” for the way in which organisational change and survival may be discussed.

The assumptions are made that the notions of the learning organisation and knowledge management are subsets of organisational survival. An examination of how these notions have been interpreted in organisations provides the context to which Maturana and Varela’s autopoietic theory may be used as a “frame” for discussion on the nature of organisations.

The combination of my experiences in organisations and discussions on the use of autopoietic theory in the organisational context, provide the basis from which I make hypotheses regarding the nature of organisational survival and the way in which organisations may be seen to change over time.
Preface

Many management writers discuss how it is possible to change an organisation, how it is important to grow the organisation, some even suggest that the organisation can learn. But what exactly is the ‘organisation’ that these writers are discussing? Are they talking about the people, the cash flow, the culture, capitalized assets or something less tangible? Is the organisation a system with inputs and outputs that can be measured? Or is it a collective of actions ordered by an ‘invisible hand’. What characteristics does an organisation have? Is it conscious, physical, observable or a figment of someone’s imagination? And if organisations are a figment of someone’s imagination why do they seem to survive?

At the beginning of the research described in this thesis I had no hypotheses with regard to any of the above questions. I did, however, have a great dissatisfaction with a general lack of clarity in management literature regarding questions of ontology and epistemology in relation to organisations and how they may be perceived to change and survive.

The research therefore had to address two key issues;

1. The development of a conceptually coherent “frame” through which to discuss organisational phenomena.
2. The determination of an appropriate organisational context and issue through which to examine the way that organisations change over time.

In response to the first issue I decided to examine the work of Maturana and Varela (1980), and their theory of autopoietic systems as the theoretical basis for the development of the conceptual frame. Autopoietic theory was chosen for a number of reasons, but primarily due to the notion that, although originally based in cellular biology, the nested theories of cognition, language and system/environment relationships that dwell within the greater theory, have potential for application in the organisational context. Furthermore, Maturana and Varela, through their theory propose a unique epistemological and ontological perspective, that when applied in the organisational context may have potential to address the issues observed above.
The second half was concentrated on applying the frame to an organisational context in order to explore the notion of organisational survival in further depth. I have tried where possible to structure the thesis so that it mirrors the way in which the research took place - developmentally. Consequently, some statements and questions that would be considered crucial to the structure of the argument do not appear until well into the thesis. This is because considerable time was spent determining the appropriate questions.

This approach also has the effect that my own position regarding the nature of organisations is not made clear for several chapters, a point which presents issues in terms of the way in which I discuss the notion of an organisation. In describing my experiences and the experiences of participants in the research it is difficult to discuss organisations without referring to them as real entities. My conclusion with regard to the nature of organisations is therefore included below such that the reader is aware of my eventual position.

*Organisations exist as an element of the non-physical environments that people generate in order to communicate about their world. Consequently, organisations do not exist externally to the people who supposedly populate them, rather they exist as a embodied element of each individual's worldview. This does not mean that organisations do not exist - they do, but not as a physical entity with a life of its own. Organisations are constructs, representations of people's experiences. In essence they are a metaphor that allows the individual to describe particular sets of interlocking behaviours.*

Part of this thesis presents my justification for the above position, the remainder applies the assumptions inherent with such a definition to the examination of a number of different companies. The notion of an organisation will be described throughout this thesis, in the same way as it is discussed in everyday language. As such people will still work “within the organisation” they may be “connected with the organisation”, the organisation may even be described as changing. These are the ways in which the participants in this research described the notion of an organisation and is representative of the way in which they conceptualized it.

This does not mean, however, that organisations are real entities in the physical sense. It should be noted that, in this thesis, the notion of an organisation and how it may be discussed is in constant development. This is a function of the context in which the notion is being discussed throughout the thesis, however, the ontology that is adopted remains consistent.
A similar note should also be made with reference to the notion of a system. Although I have made an effort to remove references that would suggest a reification of the concept of a system, it is often difficult to discuss systems without referring to them as if they existed in an objective sense. As such, please be aware that although the objects of discussion in this thesis may be termed systems, this does not denote a statement of reality but a way in which they may be viewed.

Scholarly approaches to the study of organisations have often suffered in the past through a lack of consistent assumptions. It is my hope that through the experience of this research I have contributed toward the beginning of a more consistent approach to organisational study. Many 'famous' management writers are not cited in this thesis as I considered their work would not contribute to this goal or add to the concepts I was trying to explore. This is not to say that there is no well researched management writing available which was omitted from the research, but rather that I have, in the main, attempted to avoid more mainstream management writing as its proliferation in recent years has made it impossible to cover in detail.

The conclusions that I eventually draw in this thesis will, I hope, form the basis for further more detailed research in the future. I suspect that like most experiences, however, it will be the journey that is more interesting than the destination.
Acknowledgments

There are several people who I would like to thank for their contribution to the research described in this thesis.

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Introduction

This thesis is an examination of the challenges organisations face in order to survive a shift to what Drucker (1993) has described as a post-capitalist society. Drucker argues that present approaches to managing organisations are in a period of transition from post-war industrialism towards the age of the 'knowledge worker' and knowledge organisations. He suggests that knowledge workers will be the

"leading social groups of the knowledge society...knowledge executives who know how to allocate knowledge to productive use - just as the capitalists knew how to allocate capital to productive use." (Drucker, 1993pp7).

The shift that Drucker is describing refers to changes, over time, to the primary factor in the generation of wealth. Drucker's argument begins in 1750 just after the first major shift from the Middle Ages, when ownership of the means of production rested in the hands of those who owned land. This situation changed with the beginning of the Industrial Revolution in the early 1700s. The Industrial Revolution, although usually related to the invention and development of technology, also involved a movement towards capital as the primary factor in the generation of wealth.

"In the age of capital, wealth passed from those who controlled the land to those who controlled access to capital. The rich were no longer the land owners; they were the owners of capital."(de Geus, 1997, pp23)

The emergence of the modern corporation coincided with the shift to capital, as did the commodification of labour. Drucker (1993) distinguishes three phases through which capitalism evolved as a result of a reconceptualization of knowledge. Historically knowledge had been associated with the notion of being. With the rise of capitalist society, the association shifted from being to doing.

"...in the first phase - knowledge was applied to tools, processes, products. This created the Industrial Revolution...and new [social] classes...In its second phase, beginning around 1880 and culminating around World War II, knowledge in its new meaning came to be applied to work. The last phase began after World War II. Knowledge is being applied to knowledge itself."(Drucker, 1993 pp17-18)
Drucker describes the second phase as the Productivity Revolution and the third phase as the Management Revolution. The significance of these phases is a gradual shift away from capital, towards knowledge as the primary factor in the generation of wealth. For organisations, these shifts are extremely significant as they impact upon their ability to survive, amongst other perhaps less important issues. Arie de Geus (1997) based on his study of the life expectancy of modern organisations observes that the average life expectancy of a Fortune 500 company, or equivalent, is between 40 and 50 years. Accepting these figures, there are not many organisations in operation today that have successfully been in business in more than one of Drucker’s phases. As the shift away from capital towards knowledge continues, the question of how many companies will continue to survive and potentially flourish is a poignant one. What is even more interesting are the processes involved in this survival. How does an organisation change or adapt to new circumstances? Why do some organisations disappear and others change form, yet still maintain their identity? How best should one study this process?

Research into the management and behaviour of organisations has steadily increased since the industrial revolution, partly in response to questions like those posed above. The development of theories to explain why people do what they do, how they can be motivated and how they work together has produced literally thousands of books and articles. Over time the theories were identified as belonging to particular groups of assumptions, or as Kuhn (1962) termed them, ‘paradigms’ which has subsequently led to the identification of different streams of management research. These research streams have sprung from a number of disciplines, in particular sociology, psychology, economics and the law. The use of metaphors, as identified by Morgan (1997) has also contributed to the range of organisational perspectives. Organisations as machines; organisations as organisms; organisations as neuro-cybernetic systems and so forth. Each of these perspectives has provided researchers with insights into the various relationships that constitute the functioning of an organisation. Each perspective has also, through its assumptions, limited the view of some researchers as they have closed themselves off from possibilities beyond the artificially set boundaries of their paradigm (Brocklesby & Mingers, 1999).

The many different streams of management research have also lead to a wide range of management solutions. Within management literature a large array of responses have emerged whose supporters claim assist organisations deal with the rapidly changing environment that they find themselves in. The best known of these so-called management fads includes: Total Quality
Management (TQM), Continuous Improvement, Business Process Reengineering (BPR) and the Learning Organisation. Different authors (Jackson, 1995, Murthy, 1996, Hilmer & Donaldson, 1996) have critiqued each of these fads in detail. The most damning critiques, however, come from the workplace itself. In two 1991 surveys carried out in the USA, more than 80% of chief operating officers considered the results of their TQM initiatives as disappointing. A 1992 Arthur D. Little survey, also in the USA, found 93% of firms to have adopted some form of TQM program, but only 36% of executives polled regarded the initiative as having a positive effect upon their competitive position.\footnote{These surveys are quoted as described in Jackson, 1995.}

Jackson, (1995) in his discussion of the fads suggests a range of reasons for their failure to provide sustainable improvements for the organisations involved. His critique is based on a comparison between the research program underpinning the development of the management fads and, what he considers, the more rigorous approach of the systems sciences. The systems sciences have produced a range of methodologies including Beer’s (1981) Viable Systems Model, Checkland’s (1981) Soft Systems Methodology, and Flood and Jackson’s (1991) Total Systems Intervention over the past 25 years. Viewed from a broader perspective, however, the development of systems methodologies mirrors the development of other management solutions. All are attempting to provide a means to assist organisational survival in a rapidly changing environment.

The broad range of approaches that are available for the study of organisations presents a key issue for the researcher. That is, how does one determine the appropriate perspective from which to view organisational phenomena? Most of the perspectives alluded to above are incompatible for reasons of epistemology, ontology and practicality. Some examine the notion of an organisation from the perspective of the individual (psychology), others view it as a collective (sociology) with the assumption that the organisation exists as an entity in its own right beyond the actions of the individuals within it. The lack of consistency in regard to the way that organisations are perceived creates problems of coherence if one is to attempt to understand the processes by which organisations survive.

Logically, if one is to study the way organisations survive over time, it is necessary to develop a conceptually coherent way of viewing them. The notion of “frames” as discussed by Brocklesby & Mingers, (1999) is useful here. They describe “frames” as
"...social phenomena that are inextricably intertwined with the rest of our activities. They are a product of what happens when people living and co-ordinating their behaviours, often over long periods of time, communicate and exchange explanations of their experiences." (Brocklesby Mingers, 1999:pp10)

The need to develop a “frame” through which to discuss organisational survival may be conceived in terms of Vickers’ notion of a ‘concern’.

"The activities of a human mind, when they are more than innate or conditioned responses, seem to me to originate in some concern” (Vickers, 1983:pp54)

In this case my ‘concern’ is the lack of a coherent way in which to discuss organisational phenomena. Vickers argues that the response to a concern is to construct an inner representation of the situation which is relevant to that concern (Vickers, 1983). This is a constant process that takes place throughout our lives and one that Vickers has termed an ‘appreciative system’.

“I regard an appreciative system as a work of art, both personal and social, one that is constantly revised or confirmed by three needs. First, it should correspond with reality sufficiently to guide action. Second, it should be sufficiently shared by our fellows to mediate communication. Third, it should be sufficiently acceptable to ourselves to make life bearable. It is thus a mental construct, partly subjective, largely intersubjective, that is, based on a shared subjective judgement, and constantly challenged or confirmed by experience.” (Vickers, 1983, pp55)

In many ways the methodology used for the research in this thesis is indicative of Vickers’ ‘appreciative system’. The process of developing hypotheses regarding the nature of organisations and the way in which they survive over time, is an experiential one. People learn from their own experiences (Kolb, 1984), developing hypotheses through the relationship between action, in a context, and theory. These hypotheses are tested through further experiences. Consequently this research has been built around the interplay between theory and context (or in Vickers’ language; ideas and events) in order to provide the basis from which an appreciative system may form. In this thesis, the interplay between theory and context involved the following;
Context = an examination of a range of organisations in order to understand how members perceive them.

Theory = an examination of a new theoretical perspective that may address the incoherences associated with the broad range of approaches described above.

In Chapter 1, I provide an overview of the key concepts that make up the complex matrix that is autopoietic theory. This overview is brief, however, provides the reader that is not familiar with the theory an outline to assist in understanding the discussions that take place later in the thesis. I also describe the process by which the interplay between theory and practice was managed in the research. This discussion includes an outline of the methodology adopted for the research and the rationale for its adoption. In terms of the contextual analysis, it was necessary to distinguish an issue that a number of organisations were attempting to address. This issue provided a common basis for discussion and comparison between the different organisations. Consequently I began my study of organisational survival by conducting interviews at seven Australian companies, where it was claimed an attempt had been made to become a ‘learning organisation’. The results of these interviews are shown in Appendix 1 and discussed in Chapter 2.

In order to gain a picture of how a range of organisations have changed over time and how they were conceptualized by the people involved in that change, the topic of the learning organisation was used as the basis for discussion. In Chapter 2, I undertake an analysis of the interviews described in Appendix 1. The central purpose of the chapter is to compare the approaches taken by the companies, and from this comparison, develop propositions and questions, regarding the nature of learning organisations and the processes underpinning organisational survival. In terms of the overall thesis, this analysis also provides justification for the choice of a focal topic - knowledge management.

In order to make sense of what was observed, however, I also needed a theoretical perspective from which to view the organisations. Logically, if a theory is to address the inconsistencies observed within the organisational literature discussed so far. Then the theory should come from a different field of research, in order for it to not already form a part of the inconsistencies. Autopoietic theory is an attempt to describe the nature of living systems and is consequently drawn from biology. Maturana and Varela’s (1980) examination of this topic led them to conclude that the characteristic distinguishing living systems from non-living systems, is that
living systems are, what may be termed, autopoietic or self producing, non-living systems aren't. If there is a perception that organisations are able to survive over time, then it is appropriate that the chosen theoretical perspective includes, within its scope, processes for the explanation of how living systems may survive over time. Although autopoietic theory represents yet another perspective from which to view organisations, it will be argued that its value resides in the processes of change that it describes. The processes described in the theory form a complex matrix of concepts that can be used to explain the way in which a living system maintains its autopoiesis.

The application of autopoietic theory in the social domain has been debated for many years. One of the difficulties associated with this goal is the translation of the theory from the biological to the social. Difficulties of ontology and epistemology emerge that have made a conceptually coherent application of the theory problematic. A detailed review of autopoietic theory and the attempts of other researchers to apply it in the social and organisational domains takes place in Chapter 3 of this thesis.

![Figure 0.1 Thesis Outline](image-url)
Figure 0.1 above, is a diagrammatic description of the thesis. What should be noted is that the chapters move between the two spheres of events and ideas. The events are drawn from my experiences in the companies, the ideas from the theory. The process of the thesis, conceptualized as an appreciative system, moves continuously between these two spheres in order to reach an outcome.

Discussions in the chapters 2 & 3 of the thesis, refer to the first phase in the overall research methodology. Through this phase, working hypotheses are put forward regarding the nature of organisations. As noted above, as part of the experiential process, these hypotheses are examined by further experiences in an organisational context. Emerging from my experiences in the first phase of the research, I undertook a one-year case study on an organisation as it attempted to address a perceived issue. This allowed me to observe the way in which an organisation changed over time, refining the hypotheses I had drawn from the first phase of the research.

Having developed a “frame” through which to discuss the notion of an organisation, the focus of study could move to the chosen focal issue, knowledge management. Knowledge management is viewed as a sub-issue within the pursuit of becoming a learning organisation, which in turn is viewed as a sub-issue within the pursuit of organisational survival. It provides a manageable focus through which to explore organisational survival in more detail. At the same time, issues such as knowledge management cannot be examined without a problematic context through which to facilitate the examination. Through the interviews, people at Lend Lease Corporation, identified knowledge management as a major strategic issue that they were attempting to address.

In Chapter 4 I examine the notion of knowledge or more specifically, knowledge management in large organisations. Knowledge management is a relatively new area of management science and as a result there has not been a great deal of research done on the successes or lack thereof experienced by different firms. Out of the 7 companies interviewed at the beginning of this research, Lend Lease Corporation was the only organisation to formally identify knowledge management as an issue.
Knowledge management, like the learning organisation, has been approached from a number of perspectives. Much of the work done by management researchers (Nonaka & Takeuchi, 1995, Sveiby, 1997) is based upon the work of philosopher Michel Polanyi. Practically all of these writers have adopted Polanyi's tacit/explicit distinction in order to describe the way in which knowledge is created and transferred throughout the organisation. These researchers are primarily concerned with knowledge at the level of the individual and therefore assume that strictly speaking there is no such thing as organisational knowledge. Others, (Weick, 1993, Blackler et al, 1999) view the issue from a more sociological perspective, arguing that the topic is best viewed in terms of organisational knowledge. The assumption here is that the organisation or team, as an entity, has a capability greater than the sum of its parts.

Added to the growing number of perspectives above, are a number of commentators on the subject who discuss knowledge and information as meaning the same thing, a position that will be critiqued in detail. Following the discussions in Chapter 3, the notion of knowledge will be discussed in terms of Maturana and Varela's autopoietic theory, in order to further refine the frame under development. Only so much can be learnt about knowledge management through the theory, however, therefore examination of an organisation dealing with the issue was required.

Chapter 5 presents a detailed description of Lend Lease Corporation, including its history, culture, values and general characteristics. There is no attempt made in this chapter to analyse the context, the purpose is to familiarise the reader with the characteristics of the organisation. The description included in Chapter 5, follows the history of the organisation up until the beginning of 1998. It should be noted, however, that the organisation does not stand still and since the time of the case study, the nature of the organisation has continued to change. Some of the more significant changes that have occurred since completion of the case study are mentioned in the later chapters of the thesis as explanatory aids.

Chapter 6 examines the way in which Lend Lease Corporation responded to the perceived need to manage its knowledge. The examination of organisational responses involved observation at three distinct levels;
- Organisation
- Business Unit, and
- Teams
Each of these levels provided insights into the way that the organisation operated and the issues that were involved in managing knowledge more effectively. The different initiatives that took place, and in which I was involved, are described and examined in terms of the conceptual “frame” developed in Chapter 3 and further refined in Chapter 4. Following this process a number of propositions are made regarding knowledge in organisations and what can be learnt from the experiences at Lend Lease Corporation.

Chapter 7 involves a critique of the research process. This critique takes place on two fronts;

- The application of autopoietic theory to organisations, and
- The research methodology.

The potential shortcomings of these two dimensions of the thesis are examined and reflected upon in order to address a number of criticisms that could be leveled at both the research process and the “frame” that is developed. I also point out a number of research opportunities that they offer as opposed to more traditional approaches to the examination of organisations.

The true test of whether this thesis has been successful, however, cannot be validated within its own pages. It is the task of other researchers to determine whether the contributions put forward in this thesis represent a useful perspective and approach to organisational research.
Chapter 1
Theory and Context: The Process of the Research

The greatest challenge presented by this research was to determine a balance between the exploration of the theory and observations made of the context for study. In Part 1 of this chapter I will give an overview of Maturana and Varela’s autopoietic theory in order to introduce the reader to the main concepts involved in the theory. As noted in the introduction, autopoietic theory was originally developed in the field of cellular biology to provide explanations of the functioning of living cells. The overview provided in this chapter draws on the outcomes of this original work and includes discussions of Maturana and Varela’s associated cognitive and linguistic theories. An in depth examination of the issues involved in the application of autopoietic theory to the organisational domain takes place in Chapter 3.

Interpreting autopoietic theory is one thing, attempting to draw conclusions regarding its potential application in the organisational domain and to organisational survival in particular, is another. As such, following the overview of autopoietic theory, in Part 2 of this chapter, I discuss the approach that was adopted for the research. In order to determine the potential utility of a theory like autopoiesis in understanding organisational survival, it is necessary to observe the context in question. In the second part of this chapter, the research design is described and the rational for particular decisions that were taken, made clear.

Throughout the process of this research, inspiration was drawn from ongoing reflection on the theory and my experiences in the context under study. Some of the conclusions that were drawn from these experiences are obvious, whilst others are more sub-conscious in nature and more difficult to explicate.

Part 1 – An Overview of Autopoietic Theory

Autopoietic theory was developed by Maturana and Varela (1980) to provide explanations of the characteristics of living systems, as opposed to non-living systems (Mingers, 1991. pp320). The central idea is;

"That living beings are characterized in that, literally, they are self producing"

(Maturana & Varela, 1992. pp42)
Their theories presuppose a slightly idiosyncratic language, that makes the theory harder to digest but is important to understand if one is to draw value from the ideas. The key concepts involved in the theory will be explained below.

Maturana and Varela view things in terms of organisation, structure and unities.

"Organisation denotes those relations that must exist among the components of a system, for it to be a member of a specific class" (Maturana & Varela, 1992, pp47).

Living beings are characterized by their autopoietic organisation. They differ from each other in their structure, but are alike in their organisation.

"Structure denotes the components and relations that actually constitute a particular unity and makes its organisation real." (Maturana & Varela, 1992, pp47)

A unity is more or less an object or entity that is the subject of the study. Discussing or acknowledging a unity is distinguishing the object distinguished from its surrounding environment. It is therefore viewed from a different perspective to the ‘inert’ environment that surrounds it.

Although autopoietic systems are autonomous in the sense that they are self-producing, it would be ridiculous to assume that they survive completely oblivious to the environment in which they exist. Maturana and Varela account for this relationship through the concepts of ontogeny and structural coupling. The ontogeny of a unity denotes the history of structural change within that unity, without the loss of its organisation (Maturana & Varela, 1992, pp74). This point brings up one of the major tenets of Maturana and Varela’s theories, and one that is centrally important to this thesis.

Structural change within a unity can take two forms, either a change that is triggered by interactions with the environment in which it exists, or by its internal dynamics (Maturana & Varela, 1992). So although perturbations of the surrounding environment may trigger changes in structure of a unity, they have no control over the results of those changes. These notions will be examined in more detail later in the thesis as understanding the processes of change of an organisation are fundamental to understanding the notion of organisational survival.

When considering the ontogeny of two unities, the situation of structural change can be viewed from the perspective of either of those unities. Depending on which unity is under study, the other
simply becomes a component of the surrounding environment with which that unity is constantly interacting. When these interactions become ‘recurrent, autopoietic unities can become structurally coupled. Hence, there is a history of recurrent interactions leading to a structural congruence between the two unities. Therefore, a unity is structurally coupled to its environment and vice versa.

These basic concepts raise a number of implications, some relate to the biological functioning of an organism, others to epistemology and how the organism knows both itself and its environment. It is beyond the scope of this thesis to describe in detail the many complexities and idiosyncrasies that form the (arguably) coherent whole that is autopoietic theory. For Maturana and Varela the development of further theories of cognition and language, built upon the concepts described above, begin to explore these implications.

Maturana and Varela’s theories of cognition are essentially based on the nervous system and its ability to change over time, and the processes, which that change involves. Once again, there are certain concepts that must be examined before the implications of autopoietic theory may be explored.

The notion that nervous system activity is in ‘operational closure’, is central to this theory. Operational closure presupposes that, in all cases, nervous activity results from and leads to further nervous activity in a closed cycle (Maturana & Varela, 1992.pp164). Possible and actual changes in state are therefore dependent on its own structure and not external forces. It is the structure itself that dictates what can be a trigger for it (Mingers, 1991. pp320). In this way, changes to structure of the nervous system are autonomous of external agents. What will trigger a change in autopoietic system will not necessarily trigger a change in another, or if it does, that change will not be the same, due to the differing triggering agencies within the structure of each individual nervous system.

Although the nervous system is operationally closed, it is plastic, in that its structure changes over time. It is this quality, which allows for changes in behaviour and subsequently what we describe as learning (Mingers, 1991. pp324). This plasticity is seen in the way in which these structural changes take place.

The actual microscopic transformations that occur due to interactions with the surrounding environment are unknown, however, plasticity can be seen in the way that the neurons of the
nervous system are not connected. The points of interaction are composed of chemicals, the balance of which changes due to the activity of cells, whose products are released into the bloodstream and wash the neurons (Maturana & Varela, 1991, pp168).

The plasticity of the nervous system is significant as the way in which a person learns is not to build a representation of the way in which the world is, as to do this would assume an objective environment upon which we draw our knowledge. The structure of the nervous system defines what can or cannot be a trigger for changes to take place, hence, learning is not a question of 'getting information' from the environment, but rather a result of the constant triggering of changes to the structure of the nervous system, which is due to continued interactions with the surrounding environment.

At the same time, an individual’s perception of the environment is not solipsistic in its nature, since it is a history of interactions with the environment that has triggered the structure-determined changes of the nervous system and, as such, learning. Following this line of theory, learning becomes a more autonomous activity than is reflected by the traditional behaviourist philosophies of education and is diametrically opposed to many of the change management theories that have developed from them.

Maturana and Varela’s cognitive theories would suggest that it is not possible, strictly speaking, to effect a change in an autopoietic system, as it is the system determining the nature of the change if any, yet through education, arguably people learn and can experience radical shifts in worldview (Kay, 1997). A possible response to this paradox may be found in Maturana and Varela’s theories of consciousness and language. As part of the structure of the human nervous system, it is possible for humans to generate a domain of self or self-consciousness. A central tenet of Maturana & Varela’s theory is that this domain can only exist through language or a linguistic domain. They describe language as,

"...an ontogenic communicative behaviour, i.e. a behaviour that arises in an ontogenic structural coupling between two organisms...",

(Maturana & Varela, 1992, pp209)

it is through this behaviour that the "I" arises. The "I" represents a means of distinguishing one’s self and one’s circumstances from all the other distinctions that occur within one’s linguistic domain. An individual’s linguistic domain is
"...the domain of all [their] linguistic behaviours. Linguistic domains are generally variable; they change along the ontogenies of the organisms that generate them".

(Maturana & Varela, 1992. pp209)

As an individual operates within a linguistic domain with other individuals, they will generate the self and its circumstances as linguistic distinctions of their participation in that linguistic domain. Meaning arises therefore as a relationship of linguistic distinctions (Maturana & Varela, 1992), and furthermore becomes part of the process of structural coupling.

In terms of the way in which people view their world and organisations, Maturana and Varela’s theories of language carry a number of implications, particularly from the perspective of change. Organisational change, from the perspective of the individual logically involves changes to their work environment. These changes, challenge the individual to change their “descriptions of descriptions” of the way in which they make meaning out of the different interactions taking place within their linguistic domain. Furthermore, in order for the individual to incorporate new beliefs into their worldview, the nature of their linguistic domain must be expanded so as to include these elements in the relationships of their linguistic distinctions.

This can be achieved through encouragement of “descriptions of descriptions” of the self and descriptions of these descriptions (Kay, 1994). This would be analogous to the notion of critical reflection. These ‘descriptions of descriptions’ of the self then become linguistic distinctions within the linguistic domain of the individual. As such, within the linguistic domain, these descriptions can be discussed and further distinctions made. This brief overview although far from exhaustive provides a basic introduction to some of the ideas that are discussed within autopoietic theory. What is clear, is that many of the ideas are specific to biology, whilst others relate to phenomenology. In the third and fourth chapters of this thesis the implications of both the biological and phenomenological dimensions of the theory will be discussed in order examine the issues involved in applying autopoietic theory to the organisational domain.

It is not possible to attempt to apply autopoietic theory in the organisational domain, however, unless the context for application is considered and incorporated into the overall research program. The way in which I examined the context is discussed in the next part of this chapter, in order to provide the big picture of the research design and the ideas that influenced the way in which I approached the research.
Part 2 (A) - Research Methodology and Design

In this section I will discuss the methodological approach adopted for the research and the ideas that informed it. Although several different methodological approaches have influenced the research, the primary influences were action research and grounded theory. The process conducted, however, does not fit into any clearly definable category beyond that of qualitative. I will discuss both action research and grounded theory in the next section before discussing the overall research design.

Strictly speaking the research does not qualify as an action research approach as the goal of the research was not to improve the situation in a technical, practical or emancipatory sense (Carr & Kemmis, 1986). The goal was to observe in order to inform my interpretations of the theory.

Action research is often associated with critical theory in that interventions are presupposed by an emancipatory telos. This position has its basis in Habermas’ (1972) theory of human interests. Habermas argues that knowledge is embedded in three anthropological interests of the human species, the technical, the practical and the emancipatory interests. For Habermas, the validity of any epistemological standpoint is inseparable from these underlying human interests (Oliga, 1996). Habermas’s argument has strongly influenced the development of action research, with the result that the notions of research and intervention have become melded together. As such, action research is often undertaken with the clear vision of facilitating the emancipation of people within the context under study.

As several authors observe (Peters & Robinson, 1984, Kemmis & McTaggart, 1988, Dick, 1993), however, there is little agreement regarding what characterizes action research and consequently, limited agreement regarding whether there exists a set of methodological principles that can be identified with it. Zuber-Skeerritt (1996), on the other hand, is very clear regarding what constitutes an action research project.

"The aims of any action research project or program are to bring about practical improvement, innovation, change or development of social practice, and the practitioners’ better understanding of their practices."(Zuber-Skeerritt, 1996pp83)

Having made the observation that the primary purpose of the research was to observe and not facilitate change, it would be naive to suggest that through the processes of the interviews and the
case study some change to the ideas or discussions within the research context did not take place. It is well cited that by being in the research context, the researcher does inevitably effect some change to the nature of that context. Agricultural extension models developed by Bawden and Macadam (1991) have discussed the effect of this process for several years.

This thesis covers a broad range of disciplines and topic areas but overall the focus is on the ‘practice’ of change and through this the way in which an organisation may be seen to survive. Kemmis & McTaggart, (2000) in their discussions of participatory action research suggest that approaches to the study of practice have been and may be divided by two main dichotomies.

(a) an individualistic perspective v’s a social perspective
(b) an objective perspective v’s a subjective perspective

In table 1 below, they describe 5 epistemological perspectives or traditions in the study of practice based around these dichotomies.

<table>
<thead>
<tr>
<th>Perspective:</th>
<th>Focus:</th>
<th>The Individual</th>
<th>The Social</th>
<th>Both: Reflexive-dialectical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Practice as individual behaviour seen in terms of performances, events &amp; effects: behaviourist and most cognitivist approaches in psychology</td>
<td>(2) Practice as social interaction – e.g., ritual, system-structured: structure-functionalist and social systems approaches</td>
<td>View of individual-social relations and connections</td>
<td></td>
</tr>
<tr>
<td>Objective</td>
<td>(3) Practice as intentional action, shaped by meaning and values: psychological verstehen (empathetic understanding) and most constructivist approaches</td>
<td>(4) Practice as socially-structured, shaped by discourses, tradition: interpretive, aesthetic-historical verstehen &amp; post-structuralist approaches</td>
<td></td>
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<td>Subjective</td>
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<tr>
<td>Both:</td>
<td></td>
<td>(5) Practice as socially-and historically constituted by human agency and social action: critical theory, critical social science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflexive-dialectical</td>
<td>View of subjective-objective relations and connections.</td>
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Table 1.1: Relationships between different traditions in the study of practice

The 5th perspective presented in the table above is the closest to the perspective adopted in this research, as it is also the closest to the epistemology described within autopoietic theory. The goal
is to understand the nature of an organisation and the way in which it survives over time, not only from a social perspective but by the way in which it is historically constituted by human agency.

For this reason the research design incorporates two main phases as described in the introduction. The first involved semi-structured interviews at a range of companies, the second a case study on Lend Lease Corporation. The purpose of the interviews was to provide a more defined focus for study, i.e. an issue that companies needed to respond to. The result of this process was the selection of knowledge management as the focal issue for examination.

The case study allowed me to observe the way in which an organisation or more accurately a group of people changed their practice in response to the recognition of this issue. The historical context for the changes and the rationale for why they took place would have been difficult to determine if I had not been in the context myself, experiencing the changes with the members of the organisation and consequently understanding the historical context for why they took place.

Managing the tension between theory and practice, or experience, in the analysis of the topic and the context was of key importance in the research process. The facilitation of this tension has often been described as praxis. Kolb (1984), in the theoretical development of his four stage learning cycle, suggests that praxis involves

"...the continual process of confrontation and resolution of the dialectical conflicts inherent in experiential learning." (Kolb, 1984, pp134)

Praxis, as described by Freire (1974) is the ability to resolve these conflicts through reflection and action on the world in order to transform it. What emerges is an activity based, reflective approach to the development of theories for action. The development of hypotheses in the early stages of the research was purposefully avoided for this reason. Consequently there were no attempts to disprove any hypothetical assertions regarding the concepts of organisational learning or knowledge management. The outcome of the thesis, therefore, was to develop from the observation and critique of theories-in-action (Argyris & Schon, 1978), a number of propositions relating to the theory being used, the context under study and the issues being discussed.

The definitions of praxis, provided above, should only be viewed as a theoretical starting point from which to explore and examine the research process. The main issue with definitions such as these is that they immediately describe a dichotomy between theory and practice. Accepting the autopoietic
perspective that is being put forward in this thesis, knowledge and action take on a more embodied notion than the one that has been described.

To address this issue the methodology involves the theoretical issues and the contextual issues acting as co-directors of the boundary setting process in the research. As such, the theoretical and contextual perspectives that are developed are a function of a praxis cycle that adapts each (theory and context) to the other.

This is not dissimilar to the ideas developed by Glaser and Strauss (1967) that have become known as grounded theory. Grounded theory is a qualitative research approach that is designed to allow the development of an inductively derived theory about a phenomenon (Strauss & Corbin, 1990). A key notion in grounded theory is that the results of the research constitute a theoretical formulation of the reality under investigation. A well constructed grounded theory will meet four central criteria for judging the applicability of theory to a phenomenon, these are fit, understanding, generality, and control (Glaser & Strauss, 1967) The main goals of these criteria is that the results of the research should be comprehensive enough that they make sense to the people within the situations under study, and be applicable to a variety of contexts relating to that phenomenon. The research described in this thesis aims to achieve both of these broad goals. Where this research departs from a typical grounded theory approach is in the fact that the use of autopoietic theory, as an informing framework, had already been decided when the research began. In normal grounded theory, the choice of informing theory would emerge through the research. In this respect there were assumptions present at the beginning of the research which brings the methodology more in line with the work of Miles and Huberman, (1984). Their work draws heavily of grounded theory with the distinction that they begin the process with some clearly defined assumptions regarding the direction of the research.

Part 2 (B) - Methodology, Method & Technique

In order to understand how the research methodology was actioned, it is important to distinguish between the notions of methodology, method and technique. Kay & Halpin, (1999), observe that, at least within the systems sciences, there is considerable confusion surrounding the notions of methodology, method and technique. They suggest that method can be considered technique as it reflects a dogmatic rationale and prescribed action. The notion of methodology, however, allows for the development of the research method by the practitioner. They go on to suggest that
methodology is generated through the relationship between the practitioner, the situation under study and the theory informing the practitioner.

Other descriptions of the differences between these different levels of the research process have been discussed by Mingers and Brocklesby (1996) in their examination of the use of multimethodologies. They suggest that the essence of multimethodology is

"...to utilise more than one methodology or part thereof, possibly from different paradigms, within a single intervention." (Mingers & Brocklesby, 1996pp105)

It should be noted, that like the other systems practitioners (Checkland, Ulrich, Flood and Jackson) cited above, these authors are concerned primarily with the development of methodologies for intervention, as opposed to methodologies for research. They distinguish between paradigms, methodologies, techniques and tools, providing clear examples of each. There are marked distinctions, however, between the descriptions for these terms, as used by Kay and Halpin and those made by Mingers and Brocklesby. Methodology for Mingers and Brocklesby can be prescribed, i.e. they cite some of the well known systems methodologies such as Checkland’s Soft Systems Methodology (SSM), as methodology, whereas methodology as conceptualized by Kay and Halpin, is an activity based upon an informing method (i.e. SSM). Other distinctions include the use of the word ‘technique’ instead of ‘method’ and the addition of ‘tools’, which they describe as an,

"...artifact, often computer software, that can be used in performing a particular technique... or whole methodology"(Mingers & Brocklesby, 1996pp104)

Mingers & Brocklesby (1996) raise the important point that the combining of methodological approaches within one ‘intervention’ presents a number of issues at the philosophical, theoretical and practical levels. Philosophically, there is the problem of paradigm incommensurability; theoretically, difficulties in finding ways of fitting methodologies together and practically, the level of knowledge and skills that the practitioner brings to the research.
Philosophical Issues

Debate regarding the issue of paradigm commensurability or incommensurability began in earnest after the publication of Thomas Kuhn's much cited *Structure of Scientific Revolutions* in 1962, and was most acute within the social sciences. Masterman (1970) describes, the natural or physical sciences as single paradigm sciences, a situation in which there is broad consensus on a particular paradigm. The social sciences, however, are multiple paradigm sciences, a situation where many viable paradigms compete unsuccessfully for dominance within a scientific community. Burrell and Morgan's (1979) four paradigm model of social theory is arguably one of the better known and, as a consequence, more widely critiqued arguments for the incommensurability of social paradigms. Many of the arguments are complicated by the way in which the notion of a paradigm is defined. Generally, paradigm refers to a worldview based upon a set of ontological and epistemological assumptions. The two dimensions of epistemology and ontology are regularly used as distinguishing tools for paradigmatic theorists. Mingers & Brocklesby (1996) distinguish a third dimension that they term 'praxiology'. This notion relates to how we should act in an informed and reflective manner. The differentiation between paradigms occurs through variations of assumptions on some or all of the above dimensions.

The particular ontological and epistemological assumptions underpinning autopoietic theory do not exactly align with any of the acknowledged sociological paradigms, as discussed in Chapter 3, however, there is growing consensus that the radical constructivist approach as developed by von Glaserfield (1974,1987) carries strong resonances with the autopoietic epistemology. With the exception of von Krogh and Roos’ (1996a) third stream of knowledge research, or the self-referential epistemology, there have not been as yet any claims that particular research approaches are based upon autopoietic theory, although a number of authors have attempted to apply ideas, sourced from autopoietic theory, to the fields of family psychotherapy (Dell,1985, Anderson et al, 1988, Goolishian et al, 1988), the law (Teubner, 1988,1989), politics (Jessop,1990), society and social systems as described in Chapter 3.

In this thesis, it is assumed that research paradigms are commensurable with an overall approach, this follows from the work of Skrtic (1990) who argues that the point is not to accommodate or reconcile the multiple paradigms it is to
"...recognise them as unique, historically situated forms of insight; to understand them and their implications; to learn to speak to them and through them; and to recognise them for what they are - ways of seeing that simultaneously reveal and conceal" (Skriic, 1990 p. 135)

Particular research techniques and methods may be sourced from a range of paradigms to form a methodological approach without producing research results that are incoherent.

**Theoretical Issues**

Mingers and Brocklesby’s (1996) second issue relating to a multimethodology approach is that of the theoretical difficulties associated with combining different methodological approaches and getting them to fit. It can be argued that this particular issue is only problematic because of the way in which Mingers and Brocklesby conceptualize methodology. Methodology, as described by Mingers and Brocklesby, is something that can be written down and used as a plan for action, consequently, within this conceptualization of methodology there are theoretical problems in terms of fitting the different methodologies together. In this thesis, methodologies as described by Mingers and Brocklesby have been conceptualized as methods and therefore relatively easy to combine.

**Practical Issues**

The third difficulty which Mingers and Brocklesby describe is, however, extremely important. The ability of the practitioner to conceptualize, combine and action a number of methodological processes, is the key consideration in multidisciplinary research. Much of the work that has influenced the methodological developments in this thesis, are drawn from the fields of curriculum development and systems education. The work of Salner (1986) and Bawden & Packham (1992) on the development of systemic thinking in undergraduate students consistently identifies the need for students to assimilate particular ontological and epistemological assumptions into their worldview in order that they may think and act systemically. This would not present much of an issue except for the difficulties experienced in attempting to facilitate the assimilation of these beliefs due to the well documented tendency for people to resist change to their worldview (Miller, 1985, Pope & Denicolo, 1989).

Perry (1968) in his study of undergraduate students at Harvard University, distinguished stages of intellectual development, through which some students passed when exposed to environments that
fostered or encouraged critical thought. It was suggested that changes in attitude or view toward their environment, authority, values and in general a change from a simple dualistic view of life and knowledge to a more complex relativistic view, occurred as the student matured and in response to dealing with unstructured problems where there was no single unequivocal solution (Culver & Hackos, 1982)

Accepting these observations, the process of this research should be viewed as the purposeful creation of a complex problematic environment, designed to further the researcher's development and competence in the actioning of methodology and research in general. Therefore the methodology should be viewed as a learning facilitator in the action learning sense.

The iterative movement between the three levels of methodology, method and technique is in essence a contextually relative process. Although the general phases of the research were planned, the details were determined by environmental factors, i.e. the nature of the context and changing understandings of the informing theories. The actual methods and techniques that were used during the interviews with the companies and during the case study, were dependent upon the environment of the research at that time. Therefore if the case study had been conducted at a different company, a different set of methods and techniques for defining the issues the company were experiencing may have been required. This will be explained in more detail in other parts of the thesis, as in order to explain the process sufficiently requires discussion of the notion of context and descriptions of the different contexts that were experienced during the research. 'Context' as it is conceptualized in this thesis is discussed in more detail in Chapter 4 as it is intimately connected to knowledge and action. Detailed explanations of the methods and techniques involved in the research will be discussed in the next section for Phase 1 of the research (the company interviews), and in Part 1 of Chapter 6 for Phase 2, (the case study).

Part 3 - The Research Process (Phase 1)

Organisational survival could be approached from a number of perspectives. In this thesis, the focus has been on the processes by which organisations interact with their environment and, make changes to their structure and processes in order to continue those interactions. The pursuit of becoming a learning organisation is indicative of the changes organisations feel they need to undertake in order to remain competitive and survive. Therefore the learning organisation became the initial field of theory from which to inform the research direction.
“The literature can be used to stimulate theoretical sensitivity by providing concepts and relationships that are checked out against actual data.” (Strauss & Corbin, 1990, pp50)

As will be discussed in Chapter 2, the learning organisation, as a topic, is far too broad to form a suitable research question. Therefore it was necessary to focus the research on one element of the topic. In focusing on a single sub-topic there were two things that were considered to be important.

- that the topic should be relatively unexplored, or a relatively new area of research, and
- that the issue selected should be of importance to the organisation(s) under study and therefore a contextually appropriate problem for study.

The process through which a research focus was selected involved interviews at a number of Australian companies whom, according to the learning organisation literature, had made some effort over the past five years to become a ‘learning organisation’. The purpose of this stage in the research was to determine a short-list of key issues that the organisations had experienced, were experiencing or considered would be important in the future. After an analysis of the issues which the companies identified, one of the companies would be approached in order to explore their key issue in more detail through a 1-year case study.

The Companies

The choice of which organisations would be appropriate for the research was based on their appearance in journals, newspaper articles and books on the subject. It was important that the people within the organisations had already been working towards the ideal of a learning organisation and therefore had some experience of the difficulties associated with this pursuit, there was little point in asking members of an organisation their opinion on the subject if they hadn't heard about it or had little experience with it. Twenty companies were contacted, who operated in Sydney and Melbourne. Of these twenty companies, interviews were conducted at only seven. This is not to suggest that there are only seven learning organisations in Australia, movement of individuals between companies and geographical distance resulted in some companies not taking part in the interview process. However, a significant percentage, 35%, suggested that they would be undertaking a review process within the next six months where learning organisation concepts would be incorporated into the operations of the business. Up to the end of 1996, however, these companies had no experience with the adoption of learning organisation ideas.
The primary foci for this series of interviews were the processes used in the adoption of learning organisation ideas and the issues encountered through this experience. The companies where interviews were conducted were Ford Motor Company (Australia), Hewlett Packard (Aust), 3M (Aust), Herman Miller (Aust), College Printing & Design, Carlton & United Breweries & Lend Lease Corporation.

Four of these companies were subsidiaries of a U.S. based parent company, the others were Australian companies. Perhaps the odd one out in the group was College Printing Company (CPC). At the time of the interviews CPC employed sixteen people, as opposed to over four thousand (in Australia) for Lend Lease. Hewlett Packard employed approximately one hundred and ten thousand people worldwide at the time of the interviews, however, in Australia the figure was approximately 1200 people.

It was necessary to ‘cold call’ the organisations in order to determine an appropriate contact person through which the interviews could be organised. The actual process of organising the interviews varied from one organisation to another, as the request was processed through each company’s particular structure. In general, the request was passed to whomever the reception person considered to be the most appropriate individual to deal with the inquiry. The initial phone conversation usually involved a brief explanation of the research topic and the reason for contacting the organisation. Sometimes this was an adequate basis to organise a time for an interview, however, usually a fax including a brief synopsis of the research topic and a list of guiding questions for the interviewees was sent before the interviews were approved. In all cases this synopsis was photocopied by the ‘contact person’ and distributed to the other interviewees.

During the initial phase of organising the interviews, the nominated contact person was asked if they could suggest other people within their organisation that would be appropriate to interview. The guidelines for this selection process were that the people should have had some first hand contact with the process of implementing learning organisation ideas in the company. It was not necessary that they came from different divisions or sections of the company as it was interesting to get two or more different perspectives on the process from people who had had very similar experiences. Naturally this aspect of the interview sampling was dependent on the size of the organisation in question and the person who had initially been contacted. Most companies were very helpful in both selecting and organising the people for the interviews.
The process of selection for the interview participants is interesting in that the participants selected themselves and not visa versa. It could be argued that this was a weakness in the process, as, because the organisations selected who was interviewed, the perspective that was given may have been less than candid and designed to portray the organisations in an unrealistically positive light. To some degree there is validity in this critique. The occurrence of 'censored responses', for want of a better term, was easily detectable and on the whole infrequent.

The other response to this critique is that without having any prior knowledge of the organisations or the people within them, the process of gaining entry to the organisations, in order to assess who the most appropriate people to interview were, would have been extremely difficult. Given that the purpose of the exercise, was to determine a research focus, the validity of the information gained through the interviews was sufficient to allow a selection in line with the methodological processes described above.

**Interview Process**

Up to five people from each organisation were interviewed, this number varied depending upon the availability of appropriate people. Interviewees were sent a list of guiding questions for the interviews that remained constant for all interviewees. The interviews were, however, semi-structured with the questions providing a guide for the participants. See Appendix 1b for a copy of the questions that participants were given. All the interviews conducted in Phase 1 of this research were taped with the consent of the participants.

The difference in size between these companies also produced variations in terms of the positions the people interviewed held in their organisations. In the very large organisations the people interviewed usually included a head of department i.e. director of human resources or training and key people within their team, who were suggested by them. In smaller organisations the heads of department were also interviewed, however, their discipline areas ranged from marketing through to business analysts.
The interviews generally had a duration of forty-five minutes, however, as is to be expected with semi-structured interviews the time varied in response to the answers given. Some interviews went for little more than twenty-five minutes and others up to two hours.
Chapter 2

States of Organisational Development: Exploring Australian Learning Organisations

In part 1 of this chapter, an overview of how various management writers have viewed the notion of a learning organisation. This overview should not be viewed as a comprehensive literature review on the topic but rather a guide to the breadth and inconsistencies that this topic involves. In Part 2, the observations made in the interviews from the first phase of the research, will be compared and contrasted with some current management frameworks in order to provide the basis for a number of propositions.

In Part 3, I propose 4 stages or states of development, through which the interview companies appeared to move as they attempted to become learning organisations. The emergent framework provides a summation of the observations arising from the company interviews.

Part 1 - What is a Learning Organisation?

The learning organisation arguably differs from other management fads in that it is not based upon any particular technique or methodology. The notion of a learning organisation had its origins in the work of Argyris and Schon (1978) and had become very popular within both management literature and organisations in general, at the time I began this research in 1996. Its impetus is perhaps best summed up by Arie de Geus' now famous statement,

"The last sustainable competitive advantage an organisation can gain is the ability to learn"
(deGeus,1988).

So what exactly is a learning organisation and what are the problems that organisations experience in attempting to become one? This is not an easy question to answer, as it is much easier to find people wondering what is meant by a learning organisation (Tsang, 1997, Sandow & Rhodes,1996, Jacobs,1995, Dodgson,1993, Garvin, 1993), than it is to find people who claim a more intimate knowledge of the concept.
Peter Senge, made famous by his (1990) book 'The Fifth Discipline' is one of the main proponents of the learning organisation concept. He defines learning organisations as,

"...organisations where people continually expand their capacity to create results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together." (Senge,1990, pp3)

This idealistic definition although providing a couple of pointers, in terms of people learning how to learn together and expanded capacities, still falls short in terms of addressing the incoherences relating to epistemology and ontology alluded to in the introduction. This point is illustrated in comments made by Senge in a more recent paper where the ontological statement is made that,

"...there is no such thing as a 'learning organization'. 'Learning organization' is a category that we create in language." (Kofman & Senge, 1993)

So do organisations exist or not? Pedler, Boydell and Burgoyne (1989) suggest that a learning company is

"...an organization which facilitates the learning of its members and continually transforms itself".

This definition is consistent with a number of others, and although on the surface seems a reasonable enough explanation, it assumes that an organisation exists, in the physical sense, and has the ability to act without reference to the people who create it, contradicting Kofman and Senge (1993).

Many writers have chosen to look at different elements of organisational life and the effect that these elements may have in promoting the ideals of which Senge speaks. Schein (1994) discusses the effect of culture on learning. He argues that organisational learning does not so much consist in 'adaptive learning or coping' but the pursuit of what Argyris & Schon (1978) describe as 'double loop learning'.

Culture, for Schein acts or promotes particular mental models that make the pursuit of 'double loop learning' difficult,

"...the evolution of new shared mental models is inhibited by current cultural rules about interaction and communication..." (Schein,1993 pp41)
Schein is not the only person to discuss organisational cultures, however, and an extensive amount of research has been done on this particular characteristic of organisations. A range of perspectives have been examined, including the effects of inequality (Hofstede, 1991), changing leadership (Feldman, 1986), personality traits (Chatman et al, 1995), the way in which an organisational culture itself may be changed (Schneider et al, 1994, Bate, 1995) and the general effect of cultures on the way in which companies operate (Morgan, 1997).


This brief review should only be considered as an indicator of the variety and breadth of research programs that have developed relating to organisations, learning or otherwise. Rarely are the assumptions underpinning these different research foci discussed or made clear and regularly conflict as already illustrated with the variety of definitions of what may constitute a learning organisation.

Recognition of the inconsistencies has led to a number of critiques of the learning organisation notion and in particular Senge’s work on the subject. Brown (1995), for instance, argues that

"Despite its claims the Fifth Discipline is essentially an extension of 'scientific management' and is primarily a justification for a new form of managerial hegemony" (Brown, 1996)
Brown also identifies Senge's limited examination of the effect of the organisation's environment, particularly from a social perspective,

"His failure to address the relationship between organisations and the broader society within which they lie means he has not confronted the degree of choice individual's exercise as they enter organisations and hence the extent to which the meanings imposed on the organisation meets their sense of belonging." (Brown, 1996pp99)

Jackson (1995) further critiques Senge's work on the basis of what he considers a contradictory use of systems theory.

"There is an awful tension in Senge's book between deterministic ideas of systems governed in particular ways and voluntaristic ideas of our ability to do something about systems, and this not understood by Senge because he does not situate his work in its philosophical background" (Jackson, 1995pp35-36)

Another difficulty associated with the concept of the learning organisation is that much of what is written about the subject comes in the form of reflections by consultants on their various experiences in organisations. Peter Senge's (1990) work is included in this category. Although these reflections are often insightful, the rigor of the theoretical assertions put forward by the authors must be questioned.

In the next section, I will discuss the changes that occurred at seven companies where I conducted interviews between October and December 1996. According to the learning organisation literature, efforts had been made at these companies over the past five years to become a 'learning organisation'.

The Companies

The companies where interviews were conducted, were Ford Motor Company (Australia), Hewlett Packard (Aust), 3M (Aust), Herman Miller (Aust), College Printing & Design, Carlton and United Breweries, and Lend Lease Corporation. Four of these companies were subsidiaries of a U.S. based parent company, the others were Australian owned companies.

The primary foci for the interviews was to provide an historical overview of the processes adopted by the companies in support of learning organisation ideas and the issues encountered during their experience. In addition to the interviews, other publicly available information in the form of
company reports, journal articles and books on the organisations were used in order to gain a picture of the change process. As already noted in the introduction to this thesis, the learning organisation is viewed as a subset of organisational survival. Consequently the responses of the interviewees with regard to the nature of organisations, their ability to change over time and how they change, is significant for the purpose of producing a working hypotheses later in the thesis.

The initiatives that took place in the seven interview organisations listed above are described in Appendix 1. In this chapter, I will review the outcomes of the interviews and propose an emergent conceptual framework for the way in which organisations would appear to change over time.

In terms of developing a "frame" through which to discuss the way that organisations change and survive over time, the descriptions provided in this chapter represent the first step. The interview data provides the basis from which to begin developing a ‘rich picture’ (Checkland, 1993) of the organisational context and the way that organisations would appear to change over time.

From the interviews and desktop research conducted on the seven companies it is possible to make a number of observations regarding the nature of the context. I make these observations now as they provide a context to the discussions that will take place later in this chapter. These observations will be examined in more detail throughout the rest of the thesis, however, at this time the following points may be considered.

1. Regardless of any theories relating to the ontology of organisations, the people interviewed considered them (organisations) to be ‘real’ entities, with which they interacted.

2. These entities had characteristics that
   (a) could be described by the people interviewed and
   (b) could change over time. An example of one of these characteristics was the culture of the organisation.

3. The nature of a learning organisation varied considerably from company to company. No interviewees suggested that the company, as a distinct entity, was able to learn. All referred to the learning of the people within it, or “we as an organisation learnt”.

These observations concur with the theoretical inconsistencies discussed at the beginning of the chapter. Although most people would consider an organisation to be a distinct entity, the distinction between change of the organisation and change to the individual is a blurred one. The point at which the individual stops and the organisation begins remains a topic of contention.
Part 2 – Comparing Interview Outcomes

In undertaking this analysis it is important that the relationship between the organisation (viewed as a system), the environment with which it interacts and the observer of the relationship is considered in some detail. Emery & Trist (1965) proposed that a

"...comprehensive understanding of organisational behaviour requires some knowledge of the following set, where L indicates some potentially lawful connexion and the suffix 1 refers to the organisation and the suffix 2 to the environment. L_{1,1} here refers to processes within the organisation – the area of internal interdependencies; L_{1,2} and L_{2,1} to exchanges between the organisation and its environment – the area of transactional interdependencies from each direction; and L_{2,2} to processes through which parts of the environment become attached to each other – (i.e. its causal texture) – the area of interdependencies that belong within the environment itself”

Significantly, Bawden (1999pp6) has highlighted the need to expand this matrix to include what he terms the Critical Learning System.

"What needs to be added to the matrix formed by the focal organisation (the system, 1) and the environment (the suprasystem, 2) of Emery and Trist (1965) is (0) the critical learning system that brings each into being (including itself), while being concurrently capable of critically reviewing the manner by which it does that.”

By including (0), Bawden has added the observer of the system, as a critical learner, into the process of the analysis, with L_{0,0} referring to the “the area of self revealing internal interdependencies within the learning process”(Bawden, 1999pp7). The addition of the observer is significant for a number of reasons but most importantly because it allows an epistemological shift away from viewing organisations positivistically as systems ‘out there’ to a more constructivist perspective allowing the potential for the observer to bring the system into existence. This is also consistent with the epistemology describe by autopoietic theory.

The sample of companies where interviews were held is too small to provide clear quantitative evidence for a particular process through which companies may become learning organisations or change in order to survive. There are, however, a number of similarities that can made out through comparison of the different approaches taken. It should be noted that this comparison is not
designed to find a so-called best company, or to provide a checklist of the characteristics that companies should have if they are to become a learning organisation. Each of the companies where interviews were held operated in completely different industries and started their approach to the learning organisation for different reasons. By removing the processes that the companies went through away from the context in which they occurred the results of the analysis would become meaningless.

From the sample of the seven companies, 3 identifiable change ‘triggers’ could be identified. In the context of this discussion a trigger refers to an element, either internal or external to the organisation that perturbed the system to change. The triggers that were identified are as follows:

- A visionary founder/s
- A change of CEO, or
- A crisis of some form

Any one or a combination of these change triggers were present in each of the companies where interviews were held. These triggers do not, however, represent characteristics of learning organisations. There are literally hundreds of companies that also have one or more of the above characteristics but have not become learning organisations. The three starting triggers are important in that they serve to highlight a number of commonalities between the seven interview organisations. It will be argued that regardless of the industry a company operates in, or the position from which it began its change initiative, there is a discernable process of change which leads to the learning outcomes DeGeus (1988) spoke of. The impact of the starting triggers discussed here is most obvious when considering the time periods over which the changes take place.

In the interview companies, the first trigger identified, involving a visionary founder or leader in the organisation’s early years, carried the implication that the company appeared to have always been a learning organisation. Into this category could be placed Lend Lease, Hewlett Packard and 3M (the latter based more on the literature than from the interview). In each of these organisations, the company founder/s put in place structures and processes that encouraged flexible work practices, and general principles that encouraged learning within the organisation.

In the case of HP and 3M, both of these organisations have based their success on the ability to continuously innovate new products and technologies. Consequently, the organisations have been structured to encourage a work environment conducive to producing this result. The multitude of mechanisms in use at 3M, such as the 15% rule are an example. Lend Lease, due to its slightly
different history and industrial environment, has also been forced to continuously innovate, mostly in an effort to reduce the impact of market fluctuations on the company’s survival. To a degree this was facilitated by a purposeful lack of structure in the organisation, with the consequence of increased flexibility. None of these companies, (as a whole entity not just the individual subsidiaries), has really suffered a crisis\(^4\), rather slow incremental change over time.

The second starting trigger is a change of CEO. Of the interviewed companies, College Printing and Herman Miller (Aust) would be the best examples of this trigger. In both of these organisations, the new leadership had clear goals in terms of producing a work environment that was conducive to learning, and made changes to suit. This particular point, it should be noted, can work both ways, i.e. a change of CEO can have a negative effect on the organisation.

An issue that could not be assessed through the interview data, is the sustainability of changes that emerge from this particular trigger. At Herman Miller (Aust), the CEO who was responsible for the learning organisation initiatives, had left the organisation and the company had been run by a committee of 4 or 5 senior managers. These managers would appear to have continued managing along the same lines as the departed CEO, continuing to refine the teams structure of the organisation and attempting to develop a learning culture. The new CEO, appointed 18 months after his predecessor had only been in place for a few months at the time of the interviews and consequently it was difficult to tell the direction he would steer the organisation in. From the interview participants at Herman Miller, it was clearly felt more change was needed but none commented on their perceived confidence in the new CEO to facilitate that change.

At College Printing, it was also impossible to assess whether the organisation would continue in the same direction that the current general manager was taking. The issue for this company is further complicated by its status as a semi-independent part of the TAFE college within which it operated. The likelihood of institutional changes at the TAFE level adversely effecting the operations of the company could not be ruled out.

The third trigger is that of a crisis. This is perhaps the most obvious cause of change. Of the organisations where interviews were conducted, Ford (Aust) and CUB’s Kent Brewery represent examples of organisations where a crisis was the key initiating force. In each of these organisations, the position was one of change or cease to exist. In the case of Ford and Kent

\(^4\) 3M it should be noted started as a failed corundum mine. Investors decided to make sand paper after their stocks became worthless.
Brewery the response to this situation was quite similar, reflecting the similarities in size, production process, industrial relations environment and economic state.

In both Ford and CUB major changes took place in terms of remuneration, work organisation and technology. The changes also took place within a relatively short time, approximately five years. It is important to note that the process of change in these two organisations had not stopped following the successes of their change strategies so far. The recognition of the need to learn and the value that learning adds to the workplace has become a part of the companies in the same way as it is in 3M, Lend Lease and Hewlett Packard. It will be argued that the reason for this relates to a number of states that all the organisations exhibited in some form or other and that success in these initiatives does not directly relate to the triggering agents discussed above.

The three triggering agents described above can be compared, with some value, to the situational model of organisational change strategies developed by Dunphy and Stace, (1990). The situational model described by Dunphy and Stace is significant to this thesis for two reasons. Firstly it provides an analytic tool for classifying the change approaches observed in the interview companies, and secondly it acknowledges that a key aspect of the change process is the way in which the organisation reacts to its environment in order to survive.

Dunphy and Stace’s model combines the two dimensions of scale and style of change in order to create a matrix that can be used to classify organisational approaches to change. Their assumption in doing this, is that

"...managers and consultants need a model of change that is essentially a 'situational or contingency model', that is, one that indicates how to vary change strategies to achieve optimum fit with the changing environment.” (Dunphy and Stace, 1991.pp1)

In terms of the scale of change, Dunphy and Stace identify what they term the incrementalist viewpoint. From this perspective organisational change takes place incrementally, therefore allowing the organisational systems, employees and technology to be adjusted progressively. The incrementalist perspective is juxtaposed by the argument for radical transformative change. The argument of researchers within this later stream is that:
"When organisational environments become turbulent and unpredictable managers may not be able to make organisational change incrementally, however much they may wish to do so."
(Dunphy and Stace, 1991.pp2)

The implication of this position is that in times of crisis, the choice is between organisational extinction or immediate and radical transformation. Arguments can be made against both positions depending upon the circumstances the organisation finds itself in.

The second dimension Dunphy and Stace discuss is that of the style of change leadership required by the organisation. At one extreme of this dimension is the participative approach.

"They argued consistently for employee participation as the one universal way to effect organisational change even when major corporate decisions are being made. A major aim in adopting a participative approach has been to develop commitment to an organisational vision based on shared values" (Dunphy and Stace, 1991.pp5-6)

This position is compared to what Dunphy and Stace term coercive change leadership. They suggest that this approach represents the other end of a continuum from participation through to the imposition of change strategies by senior managers/executives or outside parties. The combination of the two dimensions of scale and style produces the model shown below and the four change strategies.
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<th>Fine Tuning</th>
<th>Incremental Adjustment</th>
<th>Modular Transformation</th>
<th>Corporate Transformation</th>
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<td><strong>Collaborative</strong></td>
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<td><strong>Consultative</strong></td>
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<td>Type 1</td>
<td><strong>Participative Evolution</strong> – is characterised by incremental adjustment, achieved by collaborative means.</td>
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<td>Type 2</td>
<td><strong>Charismatic Transformation</strong> – involves large-scale discontinuous change, also achieved by collaborative means.</td>
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<td>Type 3</td>
<td><strong>Forced Evolution</strong> – takes the form of incremental adjustment, achieved through coercive means, and</td>
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<td>Type 4</td>
<td><strong>Dictatorial Transformation</strong> – indicates large-scale discontinuous change, achieved by coercive means.</td>
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Each of these can be seen to a greater or lesser degree in the changes that took place in the interviewed companies. HP, 3M and to some extent Lend Lease would appear to be consistent with Dunphy and Stace’s first type, ‘Participative Evolution’. Changes were small and incremental over time. Lend Lease is harder to classify in terms of the above model as different parts of the organisation underwent different change processes at the same time (a point that will be discussed in more detail in Chapter 5). However, ‘Participative Evolution’ would seem to characterise Lend Lease’s development over an extended period.
The processes of change at Herman Miller (Aust.) and College Printing would be most closely aligned with the second type of ‘Charismatic Transformation’. In both these companies, the ideas of a new leader were spread through the organisation leading to a collaborative change process.

The changes at Ford (Aust) and Kent Brewery appeared to be a mix of Dunphy and Stace’s 3rd and 4th types, ‘Forced Evolution’ and ‘Dictatorial Transformation’. The initiation of the change processes in both companies was forced from outside parties (Government and parent organisations) as well as senior management. Once the process was underway the changes became more evolutionary, with the development of new training programs and changes to industrial agreements evolving from those that had preceded them.

Dunphy and Stace suggest that,

“...the effectiveness of the strategy seems mainly dependent on the volatility of the organisation’s strategic environment, support for change by the workforce, and leadership of the processes of change by the corporate executive.” (Dunphy and Stace, 1991.pp10)

In their own research on a sample of thirteen organisations, Dunphy and Stace (1991), found that the fine tuning approach to change was not a viable strategy in the current environment. Corporate transformation (using a directive/coercive style) used when an organisation needs to radically regain fit with the environment, was the most common approach they found.

Although Dunphy and Stace’s (1990) model does much to clarify the range of approaches to change that organisations may undertake, it doesn’t deal with issues of sustainability in the sense that they are being discussed in this thesis. In terms of organisational survival, the model does not provide processes for avoiding a crisis in the first place (assuming that a crisis is an undesirable state), or how it is that some organisations appear to get out-of-fit with their environment and consequently require the transformative changes described. In terms of developing a coherent weltanschauung for organisational change Dunphy and Stace’s framework highlights two issues for further examination:

- what is the nature of the organisational environment?
- are there underlying processes of organisational change that are common to all organisations?
In their studies of long lived companies, Arie de Geus, (1997) and Collins and Porras (1994) seek the underlying processes that support the survival of organisations. In both cases, the organisations cited as examples of long lived or visionary companies, exhibit slow incremental change over time.

"...the long term corporate survivors we had studied at Shell had made their changes in gradual, incremental ways – almost always in anticipation of customer needs. New business was not required to be relevant to the original business and, above all there was no central control over the diversifications. They were often minimally financed or self-financing; often they were simply the result of letting some group of inventors within the firm have time to experiment" (de Geus, 1997.pp176)

Similarly, Collins and Porras describe the way in which Johnson and Johnson has changed over time in the following way,

"It tries lots of things, keeps those that work, and quickly discards those that don’t. It stimulates variation by fostering a highly decentralised environment that encourages individual initiative and allows people to experiment with new ideas" (Collins and Porras, 1994.pp147)

One of the problems in comparing the outcomes of Dunphy and Stace with de Geus and Collins et al, is the relative nature of ‘change’. For de Geus, Collins and Porras the studies covered up to five hundred years worth of changes. These changes often involved the companies cited as having completely changed the industries in which they were operating. For Dunphy and Stace, however, their research was based on short time periods and involved the people who were undertaking the changes. Viewing the changes from the outside over long time periods it can be argued reduces the severity with which the change is perceived. Therefore, the slow incremental changes observed by de Geus, Collins and Porras, could well have been described as Dunphy and Stace’s ‘Corporate Transformative’ change by the people who were involved.

The key differentiating point between the two research programs described above is that one (Dunphy and Stace, 1990) assumes an almost passive-reactive position regarding the organisation’s relationship to its environment. The work of the other researchers infers that organisations, at least to some degree, enact their environments. Gareth Morgan states the question succinctly,

"...to what extent does an organisation make and shape its environment through the processes that it uses to read, interpret, and judge the significance of what it sees in the world ‘out there,’ by selecting the domain in which it acts and determining the direction in which it develops?" (Morgan, 1989.pp91)
The point of significance is that the relationship between the environment and the organisation is not one way. The actions of the organisation, cause changes to the environment in which they take place, in the same way that environmental changes effect the structure of the organisation. Maturana and Varela (1980) suggest that autopoietic systems are able to enact their environment and furthermore that their doing so is fundamental to their survival.

Arie de Geus uses the analogy of the human immune system to discuss this notion. Interestingly his example is drawn from Varela et al (1988).

“If you take an aeroplane, for example, from New York to Rio de Janeiro, you move your body between two very different molecular soups - two environments of completely different bacteria, fungi and viruses. When you get off the plane in Rio, your immune system begins to recruit new cells from the regular flow of lymphocytes that your body produces in the spinal column and releases into the blood stream. Some of these potential antibody cells will be called into action, depending upon the new molecular environment in which your are wading....that recruitment process, rebuilds an equilibrium with the unfamiliar intruders of the Rio atmosphere.”
(de Geus,1997.pp191)

At the same time that the individual’s immune system reacts to the change in environment, the ‘molecular soup’ has also been changed by the presence of the individual. Bacteria and viruses within the individual that may not have frequented the environment previously have now been introduced and consequently the environment has changed. Moving this analogy into the organisational context and the same sets of relationships may be observed. The introduction of new products and services, production techniques, technology and knowledge to an industry, results in constantly changing levels of congruity that may be perceived between an organisation and its environment.

Summary

In order to develop a working hypothesis regarding the nature of organisations and how it is that they change over time, this thesis has so far involved a description of seven organisations, and the change processes that they undertook. In this chapter, the work of 3 sets of researchers has been briefly discussed in order to provide an overview to the issues that need to be understood and included in a weltanschauung for organisational change.
From the study so far it is possible to make the following observations.

1. In order to develop a coherent weltanschauung for organisational change and survival, a clear understanding of what an organisation actually is must be developed. None of the work discussed so far has clear assumptions regarding the nature of an organisation. Interview participants exhibited a wide variety of conceptualizations and thus far none of the researchers discussed has made their own assumptions regarding the nature of an organisation clear. Without this understanding it is not possible to make hypotheses regarding the way in which an organisation interacts with its environment.

2. All researchers on the topic make reference to the way in which the organisation interacts with its environment yet at no point make it clear what the environment of the organisation actually is. Therefore the value of their conclusions regarding an organisation’s interaction with its environment are limited.

3. Although researchers have been able to observe certain characteristics that are common to organisations that have survived over time, for example the presence of core ideologies, the undertaking of large risks, the continuity of leadership (Collins & Porras,1994). The factors that facilitated the success of these characteristics in the first place are not clear. Nor is it clear how an organisation can change from being a company without these characteristics to become one that is. As such, the underlying facilitators or enablers for the ongoing change that is required for organisational survival also need to be determined.

In order to address these issues, this research will move between the two spheres of theory and context. So far, the organisational context has been examined by way of describing the activities of seven companies and the way in which they changed over time. In the next section of this chapter, observations will be made regarding four common characteristics or states that were present in each of the companies discussed. It will be argued that these characteristics represent enablers for organisational change, which support the larger processes of organisation/environment interaction that will be discussed in the following chapter.
Part 3 - Stages of Development

Through the interviews described in , a number of stages of organisational development can be distinguished. In different ways, each of these stages involves manipulation of the organisational environment in order to increase the ability of individuals and potentially the organisation to learn and change.

Companies that have experienced a crisis, or radical change, as the basis from which to start their learning journey, provide a clearer picture of the stages of evolution than those organisations which exhibited slow incremental change over time. In Ford and in Kent Brewery the people interviewed had been a part of the change process from the beginning. It was possible, in these organisations, to give dates regarding when the change process began and the major achievements along the way. This is not possible in organisations such as Hewlett Packard and 3M where the changes had occurred incrementally over a period of 50 years or more and therefore there would be very few people, if any, who would be able to tell the whole story. As the 3M respondent noted:

"Systems like the 15% rule have been around the organisation so long, no one really knows where they came from, or when – they’re just a part of the organisation"(3M 1,15/10.1996)

It is proposed that the four stages described below form a continuum along which companies may be said to develop.

**Flexible Industrial Relations**

The first stage or state of development that the organisations appeared to exhibit was the establishment of industrial relations environments that provided for more flexible work practices. Regardless of the industry the companies were in, or the industrial relations environment that prevailed in their industry, the companies interviewed had achieved flexible remuneration and reward systems for their employees.

In the more highly unionised companies, such as Ford, Kent Brewery and to a lesser extent Lend Lease, the changes that came about were also in response to changes in the regulatory environment. Dunphy and Griffiths (1998) observe nine major changes to Australia's economic policy that influenced a shift to widespread corporate renewal through the 1980s and 1990s.
• Floating of the Australian dollar (1983) and deregulation of the financial and banking sectors (1984-85)

• Industry restructuring through major industry plans for the automotive, steel and textile, clothing and footwear industries.

• Development and use of a prices and incomes accord with the union movement, including the development of a social wage and selective industry support policy

• Industrial relations reforms- shifting from a centralised bargaining system to one that is increasingly enterprise focused.

• Higher education reforms initiated by John Dawkins-shifting universities’ focus towards integration with industry and a role as educational service providers.

• Introduction and use of a Government levy on training: the government used the levy to induce Australian firms to invest money in training to enhance the skills of their workforces.

• Microeconomic change-exposing government monopolies and duopolies to increased competition: commercialisation, corporatisation and privitisation of government enterprises and departments; airline deregulation and telecommunications deregulation. These reforms continued under the Hilmer (1993) National Competition Policy.

• Push for labour market deregulation by various employer interest groups, most notably the Business Council of Australia, which was also active in encouraging innovation within and between organisations.

• The increasing importance of the service sector for the Australian economy (Dunphy & Griffiths, 1998pp121)

These changes affected some of the companies where interviews were conducted more than others. Those companies that exhibited slow incremental change were less effected by the policy changes described above. These companies had, by virtue of the industries they operated in, the demographics of their workforce and the incremental nature of their change processes, already developed relatively flexible remuneration and reward structures.

Although unions were still active within HP and 3M, their effect was reduced as these companies were less reliant on trades based skills, at least in Australia. The majority of products from these firms are produced overseas with the consequence that the employee base is mostly made up of, what has traditionally been a described as, white-collar employees.

Those companies whose workforces were more unionised experienced the greatest changes. At Ford and at Kent Brewery an employee’s salary, prior to the changes, rewarded the employee for the number of hours they worked and the number of years they had been employed in the company. Therefore the focus of the employees labours was not on the quality of the work they produced or the efficiency with which they produced it, rather the focus was on how long they did something
for. This point is a function of the well-noted problem that, where pay is tied closely to some objective measure of output, firms generally get exactly what they pay for (Ritter & Taylor, 1997). In this case, the effective measure of output was time, with the consequence that workers behaviour was focused on how many hours they worked, rather than the output itself i.e. cars and beverages etc (Baker et al, 1994).

Other problems existed, in that the

"...only opportunity that most wage employees [had] to increase their income [was] for their union to achieve an across-the-board wage increase. Consequently, for many there [was] little monetary incentive for improving their skills." (Ford, 1982:pp50)

The system was also difficult to change with many ingrained policies, attitudes and agendas. Any change to work conditions invariably resulted in industrial action and consequently added to the inefficiencies that the organisations were experiencing. During the 1980s, this situation was widespread. Ford (1982) observes

"A major barrier to skill formation in Australia is the complex interrelationship between training and industrial relations, particularly in relation to traditional concepts of wage fixation. Innovations in skill formation in Australia are continually being blocked by powerful groups, particularly if they believe that such innovation may at some future time alter their wage relativities, their bargaining position, their organisational power or status."(Ford,1982:pp51)

The process of Enterprise Agreements that Kent Brewery had undertaken during the 1980s did little to change this situation. These agreements were essentially old industrial awards (Ford, 1995), relating mostly to changes in pay and conditions and didn’t encourage learning or development on the part of the employee. Nor did they take into account the minority groups within the organisations. As was noted in the interviews, both Kent Brewery and Ford (Aust) employed large numbers of migrant workers with limited English speaking skills. The ability of these workers to participate in union meetings and vote on important decisions regarding pay and conditions was minimal due to language and cultural barriers.

"If migrant workers are to be able to participate in industrial democracy, then they must develop appropriate written and verbal skills in the language of the host countries....[however] mere fluency in the local language is not itself sufficient to allow people to participate in discussions
which require an ability to understand and evaluate ideas, concepts and processes, particularly when these cannot be related to the person's education or experience." (Ford, 1977. pp290)

The traditional processes of enterprise agreements also did little to reduce the multitude of dichotomies that existed within Australian industrial relations.

"Outmoded and outdated concepts, such as the status dichotomy between manual and non-manual workers, between blue-collar and white-collar workers, between wages and staff employees, between programming and operating, and operating and maintenance, provide major barriers to developing individual, group and organisational learning systems." (Ford, 1982. pp47)

As noted in Appendix 1, some of these dichotomies still exist at Ford and at Kent Brewery after several years of change. The net result of these dichotomies is a reduction in the flexibility of the workforce and the organisation in general, thereby limiting its ability to respond to and enact its environment. The systems of remuneration that existed prior to the changes encouraged, on the part of the wage earner, a myopic view of the workplace. Employees were not encouraged to view their organisation in terms of a whole system. Artificial boundaries were created between trades, pay levels, and job roles.

"Traditional Australian organisations had highly specialised jobs and clear job demarcations. Many organisations in manufacturing relied on immigrants as 'factory fodder' to fill the narrow, underskilled process work jobs that characterised Australian industry. On the other side, the craft-based unions, whose members were skilled, jealously defended their specialist skills and the demarcations that supported the jobs of their members" (Dunphy & Griffiths, 1998. pp129)

These dichotomies were functions of the non-physical environments in which the organisations existed and, at the time, were necessary in order for the organisations to maintain congruity with the legislative (non-physical) environments in which they were operating. These dichotomies, however, became strong barriers to more efficient work practices.

The economic restructuring of the Federal Government in the late 1980s and early 1990s placed pressure on the non-physical environment to change.

"The Australian government, industry and unions were faced with choices between:

- Competition based on maintaining a workforce with low skill levels and low wages, and
- Competition based on high skill levels, higher wages but values adding.' (Dunphy & Griffiths, 1998. pp129)
Competition based upon high skill levels was considered the more sustainable path, but required the dismantlement of these dichotomous work structures, a process that is still continuing through the use of further enterprise development agreements.

Another dimension of the industrial relations environment being discussed here is the measurement of the employee’s skills and knowledge, and their contribution to the organisation. Without exception, each of the companies had appraisal systems in place that provided a process for the employee to move through the organisation and develop new skills, and knowledge. In the case of Ford and of Kent Brewery, the change initiatives involved appraisal systems that were tightly linked to skill acquisition. In HP, 3M, and Lend Lease, the appraisal systems also took into account the career development of the employee. The systems by which this takes place are described in Appendix 1 for HP and 3M. Promotion through the organisations was therefore linked to the learning of the employee. Due to their size, College Printing (16 people) and Herman Miller (28 people in Australia), gave less priority to this dimension of their reward and recognition systems. There were only limited options in terms of movement within these organisations.

Regardless of the industry, or the industrial relations environment that the organisations operated in, the remuneration, reward and recognition systems that were in place, allowed for increasing flexibility in the workplace.

From the interviews, it appeared that a flexible industrial relations system had the following characteristics:

- Developed participatively with the appropriate union bodies
- Reduced demarcations between disciplines and job roles
- Encouraged learning and self-development by linking remuneration to skill acquisition
- Closely linked appraisal and evaluation processes to remuneration and career planning
- Allowed for some form of employee ownership of the company

The remuneration systems of the organisations, it could be argued, deal with the motivational dimensions of the learning organisation notion. This of course assumes that financial return and promotion are primary motivators for most employees (an assumption that is only valid under certain circumstances). Bandura’s (1995) arguments regarding self-efficacy are significant as they suggest people behave according to the expectations of the result of their behaviour. He argues that
giving or removing awards has a basically unpredictable effect upon an individual’s behaviour. The motivational effect of an inducement is relative to how the person perceives it, something that is determined by the individual, not the organisational environment (Bandura, 1977). Bandura’s perspective is consistent with that of Maturana and Varela (1980) in the sense that the individual’s motivation is self-regulated, but at the same time neither a function solely of the environment or the individual’s physiology.

Research undertaken in the US by Mahen Tampoe in 1988 identified four key motivators of knowledge workers:

1. Personal Growth – the opportunity for individuals to realise their potential, supporting the hypothesis that knowledge workers were seeking intellectual, personal and career growth.
2. Operational autonomy – a work environment in which knowledge workers can achieve the tasks assigned to them within the constraints of strategic direction and self-measurement indices.
3. Task Achievement – the achievement of producing work to a standard and quality of which the individual can be proud. There is a need for the task undertaken to be relevant to the organisation.
4. Money – earning an income which is just reward for the contribution made and enables employees to share in the wealth created by them, through incentive schemes geared to the company’s success but related to their personal performance. (Tampoe, 1996.pp184)

Following the determination of these key motivators, Tampoe circulated another survey in order to prioritise them. The results of this process largely confirmed the order shown above, however, the majority of respondents showed a very strong preference for one of the four, leading Tampoe to comment that,

"...this generalised data cannot be used without the priorities for each individual being identified and catered to."(Tampoe, 1996.pp184)

It should also be noted that the respondents in Tampoe’s research all earned ‘well above the national average wage’, a different sample made up of lower income earners may have returned a different result in terms of the importance placed upon money as a motivator.

Due to a lack of corresponding research on Australian workers, it will be assumed that cultural differences between Tampoe’s sample and Australian workers of the same remuneration level would have a negligible effect upon the outcome of the findings.
Accepting Tampoe’s findings, the importance of non-financial motivators, is highlighted as a key dimension in the pursuit of becoming a learning organisation and with that sustainable ongoing organisational change. In terms of the argument put forward in this chapter, regarding the need for flexible industrial relations as a starting point from which to develop a learning organisation, flexibility in working hours, methods of appraisal and promotion are examples of non-financial motivators. These processes were also a part of the overall industrial relations strategy of the interview companies.

Restructuring

The development of an organisational structure that encourages learning was a key dimension of the non-financial motivators described by Tampoe. Organisational restructuring also constitutes the second stage of organisational development that is proposed here. This particular state or stage is multifaceted in the sense that in a number of the companies interviewed, restructuring involved considerable reduction in the number of employees.

Unfortunately, for many workers at both Ford and Kent Brewery the move to more flexible pay conditions also corresponded with the process of downsizing the respective organisations and as such job losses. Although the process of downsizing was widespread across Australian businesses in the late 1980s and early 1990s, it did not always result in the productivity gains that were expected.

“There have been many occasions when companies have shed staff, only to discover soon afterwards that they need to recruit new employees at considerable expense because of skill shortages” (Field & Ford, 1995.pp55).

In terms of becoming a learning organisation, the potential benefit of downsizing is not in a reduced workforce, rather matching the size of the workforce to the required productivity levels. In the cases of the organisations being described in this thesis, the downsizing process was combined with comprehensive restructuring of the work organisation within the company. This process lead to flatter, less dichotomous, organisational structures.

The most common process for handling the required reductions in employee numbers is to offer voluntary redundancy packages to employees. It has now been conclusively shown, however, that
the offering of voluntary redundancy packages, as part of a downsizing process, carries a number of non-financial costs that were generally unforeseen. For example, the highly qualified, experienced employees, who could easily get a job somewhere else, left the organisations (Field et al, 1995) often receiving lucrative redundancy packages. In the context of an organisation undergoing radical changes these employees constituted an asset to the company, they were less afraid of, and consequently more able to deal with, change.

The inefficient, less motivated employees, who often resist change to their work environment, are less likely to take voluntary redundancy and so remain in the organisation. As such, the sum result of the voluntary redundancy process is for the company to pay a lot of money for the better employees to take their knowledge and experience (probably learnt at and paid for by the company) to another organisation. The resulting ‘brain-drain’ from the company can take several years to recover. At the organisations where interviews were conducted, the act of downsizing was seen as part of an overall process of change rather than a mass cost cutting exercise (although reducing costs was important). This is not to suggest that the workers found the process painless or liberating, rather that downsizing was not seen as the end in itself.

It is highly unlikely that the massive reductions in staff that took place at Kent Breweries for example, where employee numbers were reduced from 640 – 330 over 4 years, could have been undertaken without the collaboration of the unions involved. Ray Marshal (1994), a US labour consultant makes the point that

"You’re not going to make the high-performance system work unless the workers have an independent source of power [that is unions] to represent them in the process – mainly because they won’t go all out to improve performance unless they can protect themselves. Most American workers believe that if they improve productivity, they will lose their jobs. And they believe that because they will. So you can’t expect them to go all out, unless you give them job security"

The notion of employability is significant to Marshal’s argument, with many organisations, although not necessarily those that form the sample in this research, offering a broad range of educational and developmental systems for employees. Whilst employers cannot provide permanent job security, their human resource systems ensure that employees have recognised skills and experience that will help them get a job somewhere else (Field et al, 1995). The notion of employability, although holding some benefits for employees in volatile industries such as construction, can be viewed as a double-edged sword in other more knowledge intensive industries.
As the 3M interview respondent noted in Appendix 1, 3M's career planning and appraisal process sometimes resulted in employees skilling themselves out of the organisation and into the competition. This loss can be extremely costly, particularly if the employee had considerable firm-specific human capital\(^5\) (Ritter & Taylor, 1997). The value of initiatives such as employability, however, relates to the development of trust between the employee and the organisation. De Geus, notes

"Without trust there is no cohesion and, thus, no living company."(de Geus, 1997.pp146)

The development of a trusting work environment was made even more difficult in the case of a number of the interview organisations, due to the corresponding movement towards teams based work structures. As such, uncertainty regarding job security was combined with the need to work in unfamiliar ways. Responsibilities that had once belonged to supervisors were now shared within the team. Empowerment of employees is often cited as one of the justifications for teams based structures (Manz & Sims, 1984, Nonaka,1988). It could be argued that this point is consistent with Tampoe's (1996) second key motivator, operational autonomy, and the ideas of Bandura (1995) regarding the perceived self-efficacy of employees.

It is difficult to make generalisations regarding the way in which teams should be structured or operated in order to develop a work environment that encourages learning. The variety of team structures and purposes for which they were used in the interview companies and in other researched organisations is beyond the scope of this thesis. As Dunphy and Bryant (1996) observe,

"The criteria for classification can vary from the degree of self-management (self-managing, semi-autonomous teams); the nature of the team membership (project teams, parallel teams, virtual teams); or the purpose and function within the organisation (service teams, quality teams, operational teams)". (Dunphy & Bryant, 1996.pp679)

In the interview companies, the teams were generally responsible for many management functions including the assignment of tasks, interpersonal problem solving, monitoring product quality and conducting team meetings (Neck and Manz,1994). This position forms a stark contrast to the job roles held by line workers prior to the initiation of the change strategies, particularly in the manufacturing organisations.

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\(^5\) Human capital is an economic term referring to the value of an employee's collection of applicable knowledge and skills. This notion will also be referred to as intellectual capital elsewhere in this thesis.
The process by which employees are empowered and in some cases disempowered has received considerable attention (Fiorelli, 1988, Bennis, 1989, Barker, 1993, Quinn et al, 1996a) with a multiplicity of issues being identified. For example Gandz & Bird (1996) observe that it is difficult for managers who have been rewarded for less participative modes of management to overcome their learned patterns of behaviour. Janis (1972) received some acclaim for his work on group decision making, known as ‘groupthink’

“...a mode of thinking that people engage in when they are deeply involved in a cohesive in-group.....members striving for unanimity override their motivation to realistically appraise alternative courses of action...a deterioration of mental efficiency, reality testing and moral judgement that results from in-group pressures” (Janis, 1972, pp9)

Dunphy and Bryant, (1996) questioned the broad-brush adoption of multi-skilling in teams, finding it to be inappropriate where there was either high skill complexity or low task interdependence. Barker (1993) described the ‘concertive power’ exerted on team members through a longitudinal study, noting that considerable stress was placed upon employees as a function of their membership within the team.

Across the interview companies, team structures were applied for a range of reasons and to different areas of the organisations. For example at Kent Brewery, the restructure involved the development of

“...self-organising, integrated work area teams, backed up by project and knowledge transfer teams and by a corporate concept team.” (Ford, 1995, pp27)

In each case the team structure provided the basis from which further organisational development could take place. The implementation of teams, self-managed or otherwise is not, however, the factor that provided the improvements to efficiency and quality that the organisations had been seeking. This point is supported by the failure of many organisations to successfully implement a teams-based structure.

“During the start-up phase...the deployment of team members who are only beginning to learn new skills normally leads to deficits in the team’s performance. The performance problems particularly center around time delays that may prove costly and deterioration in the quality of products and services. In some cases known to the authors, these deficits were so serious that
they have led management to abandon the multi-skilled team approach.” (Dunphy & Bryant, 1996, pp.687)

The restructuring in the interview organisations towards a teams-based work organisation, involved a number of changes to the work environment of the employees. There were changes with regard to the way in which employees interacted socially and with technology. Previous skill dichotomies were removed requiring workers to be proficient at more than one or two jobs. Power relationships that had previously operated were also being dismantled. People were now being asked to make their own decisions on many aspects of their job that had previously belonged to their supervisor. A flexible industrial relations environment that rewarded people for moving outside of their original job roles and developing skills in new areas supported the changes.

The development of new skills is fundamental to the success of the initiatives undertaken by the interview organisations. Without the development of education programs to support the changes, the failures spoken of by Dunphy and Griffiths (1998) could well have occurred. It is for this reason that the third stage of evolution proposed in this model is that of learning, training and education.

A Focus on Learning, Training and Education

The first two stages described above, provide the basis of a work environment in which learning may be encouraged and developed. Neither of the two previous stages is efficacious in themselves, however. In the context of the framework developing here, it is the relationship between the remuneration system, the organisation's structure and the educative support which the organisation provides its employees, that promotes the learning environment conducive to the learning organisation ideal.

In the case of both Ford and of Kent Brewery, the training programs that were developed provided the employees with a central element of their remuneration package. The more skills that were accumulated, the more points were attracted to the their particular skill base and therefore they received an increase in their remuneration. Often the training process involved employees undertaking degrees at University, and as such the organisations often created some sort of relationship with a University. Therefore the skills the organisations were encouraging their employees to develop were not specific to their organisation but more general and management oriented in scope.
At Kent Brewery, Lend Lease and Ford (Aust) the implementation of multi-skilled and self-organised teams, was undertaken with a view to giving employees a greater understanding of the whole production process, greater flexibility through multi-skilling and a sense of ownership in doing an effective job (Dunphy & Bryant, 1996). In Civil and Civic, Lend Lease’s construction arm,

“Work teams were put together with the idea that they would skill each other. Site visits were a revelation; a concrete pourer teaching a carpenter how to pour concrete was one of the skill swaps in evidence. And it is this skill transfer that is crucial; to know what your colleague is doing and to understand the process is the only way to improve the overall result.” (Shaffran, 1993.pp36)

At both Kent brewery and Civil & Civic, the notion of conceptual shifts was used as a learning tool. One of the important shifts that was stressed was that of training to learning. In each of these companies, the combination of flexible industrial relations, restructuring to teams-based work organisations and a focus on both propositional and experiential learning had successful outcomes. It should also be noted that in combination these initiatives produced a workplace environment that supported the motivational needs of knowledge workers described by Tampoe, (1996). Employees now had increased opportunity to realise their potential in the sense that they were assigning their own tasks (Tampoe’s first key motivator). Employees had increased operational autonomy (Tampoe’s second key motivator), and were now responsible for measuring the quality of the work they were producing (consistent with Tampoe’s third key motivator).

A point that was not discussed at the interviews, however, was the monetary cost associated with the development of the self-organised teams.

“Major costs appear to be associated with the training and skilling needed for multi-skilled groups. In our field research we encountered a repeated theme in association with multi-skilling of team members which was the costs associated with training and multi-skilling were often significantly underestimated by management when undertaking the introduction of multi-skilled teams.” (Dunphy & Bryant, 1996, pp687)

For Kent Brewery and for Ford there was, and continues to be, considerable spending on literacy skills, a basic requirement for a self-managed team. Given that many of the teams were self-
managed, considerable education was required in order for the members of the teams to develop the skills that were previously required of their supervisors.

Strategies like TQM, or a variant thereof, were introduced in all the companies where interviews were conducted. The relative success of their approach, however, related back to the organisation’s development or evolution through the stages being described here. Employees, through their new responsibility in the teams are encouraged to think about and improve the production process, i.e. learn better ways of doing what they already do. Another example of this can be drawn from Civil and Civic’s Darling Park Project,

“One team in the formwork area suggested more than 80 innovations in the design of the formwork scaffolding, including such things as standardising all bolts on the formwork to a single size to boost productivity” (Roberts, 1993.pp2)

The Darling Park project was completed in 48 weeks as opposed to the 60 weeks which was considered the norm for the industry. Regardless of the shortcomings of TQM and its reputation as one of a range of fad management tools, the notion that employees think about and are empowered to change elements of the production process is a radical departure from being trained to operate machinery, and never question its place in the overall production process.

Deming, (1982) one of the original proponents of the quality movement put forward 14 points for management that are consistent with the changes described above.

1. Create constancy of purpose toward improvement of product or service, with the aim to become competitive and to stay in business, and to provide jobs.
2. Adopt a new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead minimise total cost. Move toward a single supplier for any one item, on a long term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership. The aim of supervision should be to help people and machines and
gadgets to do a better job. Supervision of management is in need of overhaul, as well as
supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company.
9. Break down barriers between departments. People in research, design, sales, and production
must work as a team, to foresee problems of production and in use that may be encountered
with the product or service.
10. Eliminate slogans, exhortations, and targets for the workforce asking for zero defects and
new levels of productivity. Such exhortations only create adversarial relationships, as the
bulk of the causes of low quality and low productivity belong to the system and thus lie
beyond the power of the workforce.
11. (a). Eliminate work standards (quotas) on the factory floor. Substitute leadership (b)
Eliminate management by objective. Eliminate management by numbers, numerical goals.
Substitute leadership.
12. Remove barriers that rob the hourly worker of the right to pride of workmanship. The
responsibility of supervisors must be changed from sheer numbers to quality.
13. Institute a vigorous program of education and self improvement.
14. Put everybody in the company to work to accomplish the transformation The transformation
is everyone's job.
(Deming, 1982.pp23-25)

A careful examination of Deming's 14 points shows them to cover the same elements as described
so far in this chapter. The removal of barriers in terms of remuneration and job role demarcations,
the institution of training and education, the establishment of trust in the workplace etc, these
characteristics could be observed to a greater or lesser degree in each of the interviewed companies.
In all cases, whether the organisations were responding to a crisis or continuing their steady,
evolutionary process of incremental change, the development through flexible remuneration
systems, dynamic organisational structures toward a focus on learning, could be observed.

In the case of the interview organisations, these changes took place in the first half of the 1990s.
Consequently, new issues have begun to emerge. Although learning within teams and business
units had been successfully achieved learning across the organisations was still yet to occur.

In the case of Herman Miller, the movement to a multi-functional teams structure had produced
significant increases in productivity and quality within the teams, however, there were costs
associated with this. As one of the interviewees from that organisation noted
"...we've started to develop yet another culture where these satellite teams became autonomous to the point where if one was really busy and one wasn't, the one that wasn't busy didn't want to do the work of the other team and pick up the overflow, because they became very territorial." (Herman Miller, 6/11/1996)

At Ford (Aust) the development of different training and education programs had created, in the opinion of one interviewee (Ford 2,7/10/1996), a system that was too complicated. Time was needed to take stock of where the change process had lead to and develop an appropriate strategy for the future. There were also continuing concerns over the inflexibility of the industrial environment that they were operating in. These issues were relatively small, however, in comparison to the effect of Ford Motor Company's planned globalisation.

Ford's movement towards a global organisation, as opposed to a multi-national, carried the implication that Ford Australia's own efficiency, productivity and quality improvements now need to be combined with the rest of Ford Motor Company globally. The Ford 2000 initiative was only in its early stages at the time of the interviews and so how Ford (Aust) would be merged into the global entity was unclear. The issues that the organisation would need to deal with were largely unknown and therefore did not emerge from the interview process. The clearest issue with regard to Ford's globalisation, was that the survival of Ford (Aust) could not be guaranteed. As noted in Appendix 1,

"We're over capacity on a world scale, that means we've got more assembly plants that can produce more vehicles than the total worldwide demand, but already their building more assembly plants in Thailand, Taiwan, Vietnam, China and Indonesia. So whilst we're looking OK at the moment in 6-7 years time when those plants are up and running, and producing high quality vehicles, I'm presuming their cost of labour will be a lot lower and tariff protection rules will be in favor of them a lot more than us...what happens?" (Ford 3,7/10/1996)

Lend Lease Corporation, was also beginning to deal with the effects of globalisation. The markets for its financial services and construction products had been rapidly maturing within Australia and the need for continued growth required expansion overseas. Like Herman Miller, although on a much larger scale, the different businesses that make up Lend Lease Corporation appeared to be effective learners in themselves, however, there was only limited learning or cooperation from each other.
"The process of getting buy-in.....I guess getting core businesses lined up is sometimes difficult. I mean if a chief executive says jump – no one will say how high. Its just not the culture in Lend Lease. If you want to do something here, you’ve got to go around and convince people of the benefits to their business"(LLC1,11/12/1996)

The recognition of the need to learn not only across businesses but also national borders highlighted the movement to the fourth stage or state of evolution that I will discuss in this chapter: the management of knowledge.

Knowledge Management

Through the interviews, Lend Lease Corporation identified knowledge management as an issue that currently (1996) they needed to address. None of the other companies where interviews were held identified this issue. It could be argued that knowledge management was also an issue for Herman Miller, Ford (Aust), HP and 3M, however, at the time of the interviews they failed to articulate it.

In terms of the developmental model being proposed, knowledge management represents what might be termed the most evolved or developed state. As a consequence, there are few organisations that could claim to have successfully addressed the problem and even less research that has examined how organisations may successfully manage their knowledge, or if it is even possible. Much of the work that has been undertaken on knowledge management is theoretical in nature and will be discussed in detail in Chapter 4 of this thesis.

In essence, the problem of knowledge management is the following: Accepting that the organisation has moved through the first three states of development described in this chapter, how may the organisation ‘amplify’ (Nonaka & Takeuchi,1995) the learning across the organisation and as a consequence maintain or further develop its competitive advantage?

Researchers, such as Dertouzo, (1997) suggest that knowledge management is an information technology (IT) issue. The result of this perspective is that the focus of the organisation’s efforts to manage knowledge are on the IT system. Others (Collins, 1993, Blackler, 1998) have concentrated on the sociological aspects of knowledge transfer.

In order to examine knowledge management in more detail, a one-year case study on Lend Lease Corporation was conducted. Lend Lease was chosen due to it being the only interview company to
formally identify the issue. In undertaking the case study, the primary focus of observation was the way in which the organisation reacted to the identification of the issue and the initiatives that emerged to address it. These observations will be tied back to the developmental model presented in this chapter.

Summary

In this chapter, a developmental model has been proposed for the way in which the interview organisations would appear to have moved towards the ideal of a learning organisation.

The four states or stages of development described in this chapter are depicted in Figure 3.2 below.

![Stages of Organisational Development Diagram]

**Figure 2.2 Stages of Organisational Development**

As can be seen in the diagram, there are no clear distinctions between the stages, rather changes of focus. Most of the examples drawn upon in this chapter to support the model come from the manufacturing firms within the seven company sample. As noted, this is mostly due to the short
period of time over which these firms have moved through these stages. It is argued, however, that all the firms have moved, or are in the process of moving through these stages regardless of the industries they are in.

Hewlett Packard, for example, would appear from both the interviews and literature, to have always had innovative industrial relations in terms of employee benefits and ownership, having developed incrementally to the current packages it provides to employees today. HP has always been structured in order to enhance the opportunity of its employees to innovate and learn, and as such has not required the severe restructuring seen at Ford and Kent Brewery. Like the two manufacturing firms, HP has relationships with Universities and other educational institutions. Employees are encouraged through the HP appraisal system to continuously educate themselves, with the support of the organisation. The only difference between HP and the manufacturing organisations with regard to the developmental stages proposed here, is that HP has evolved through them incrementally since 1939, as opposed to 5 or 6 years for Ford and Kent Brewery.

The developmental model can also be used to develop explanations as to why the so-called management fads of the 1990s have been so unsuccessful.

For example TQM by itself is often unsuccessful:

"...TQM is good at telling us how to design production processes so there are zero defects and quality is designed in; it is not good at explaining the sort of organisation structure which will enable people to give their best and produce quality products." (Jackson,1995,pp34)

In the context of an organisation that has reached the third stage of the model in this chapter, however, it can be argued TQM initiatives have a far greater chance of success. The flexibility in the remuneration systems, makes it possible to reward employees particularly for improvements in quality. The teams-based structures described encourage employees to take responsibility for quality issues. Furthermore, the clear strategies of the organisations with regard to learning and development on the part of their employees and empowering them to make changes to their work practices increase the likelihood of success.

From a theoretical perspective, however, the developmental model has many of the same inconsistencies that were noted in the company interviews and the work of other researchers. There is a lack of clear assumptions with regard to the notion of an organisation, for example; is an
organisation an individual entity or a function of the individuals that populate it? If the processes underpinning organisational survival are to be understood then it is necessary to understand why these actions would appear to support the survival of organisations over time.

Consequently the following questions remain to be addressed.

1. If the environment of an organisation is significant to the notion of a learning organisation, organisational change and survival, what is the nature of an organisation’s environment?
2. Where does the individual stop and the organisation begin? Without an understanding of this issue, how is it possible to distinguish the organisation’s environment from that of the individual?
3. If it is possible to determine the nature of an organisational environment, how does an organisation interact with it?

In the next chapter I will explore these questions through an examination of Maturana and Varela’s autopoietic theory. An important dimension of autopoietic theory is the way in which an autopoietic system interacts with its environment. As noted above, there have been a number of attempts to apply ideas from autopoietic theory to the study of organisations. Many attempts have been deemed unsuccessful due to their inability to resolve issues of ontology and epistemology in translating the theory from the biological to the organisational context. These issues will be discussed and proposals put forward regarding how they may be addressed.
Chapter 3

Are Organisations Autopoietic?

Discussion and debate over the application of autopoiesis to social systems has been enthusiastic since Maturana & Varela’s (1980) theory was translated from Spanish into English in the early 1980s. In this chapter I will examine the debate so far, in order to provide a platform from which to further develop a “frame” for the discussion of organisational phenomena.

The chapter has been divided into three distinct parts in order to structure the discussion. In Part 1, I present a review of the literature relating to social autopoiesis, starting with the original theory and tracking the debate through to today. This review covers literature from a range of different disciplines and outlines a number of different approaches to the issue. In Part 2, I examine some of the critiques that have been brought against autopoietic theory and its application in the social domain, in order to clarify a philosophical position from which to view the problem. In Part 3, I examine the work by German sociologist, Peter Hejl in some detail. This examination forms the basis for the development of “frame” through which to discuss organisations.

The chapter concludes with a working hypothesis on the nature of organisations and the way in which they interact with their environment. This working hypothesis is then tested in the second phase of the research.

Part 1 – History & Theoretical Debate

In order to understand the difficulties of applying autopoietic theory to social systems, it is useful to briefly visit the history of the theory from whence it came. Humberto Maturana and Francisco Varela originally proposed Autopoietic theory, with the purpose of redressing what seemed to them to be

"...a fundamental imbalance in the understanding of the living organization." (Varela, 1981pp36).
Their concern was not the explanation of social systems or organisations, but rather what it is to be a living being. Varela (1996) suggests that the first seeds of autopoietic theory were sown in a paper by Maturana (1970) where the connection was made between the circular nature of neuronal processes and the notion that the organism is also a circular process of metabolic changes. In 1972, the two published the monograph titled De Maquinas y Seres Vivos: Una teoria de la organizacion biologica. (Of Machines and Human Beings: A theory of biological organisation). The English text did not appear until 1980, entitled Autopoiesis and Cognition: The Realization of the Living.

Central to the theory were the notions of self-production and autonomy. These ideas were not new and had long been discussed in different forms by many philosophers and scientists. Varela (1996) comments on the influence of a number of researchers during the formulation of the theory; however, it is unclear to what extent the ideas of social philosophy influenced the development of autopoietic theory.

Zeleny, (1980) cites four authors who developed ideas of self-producing social systems; Giovanni Battista Vico (Bergin, 1970), Bronislow Trentowski (1843), Carl Menger, (1883) and Friedrich von Hayek (1975). In all cases, these theorists suggested that the social system exhibited behaviour which was self-derived and not wholly the result of human production. Such a position carries with it the implication that social systems are entities, acting with a degree of autonomy from the component organisms (whether they be humans, ants or cells) that create them. In other words, social systems have a life of their own. The position of living social systems was, however, only implied in the works of the above authors, and not necessarily a statement on how things actually are. As already stated, autopoietic theory was originally developed as an explanation of what it is to be a 'living being'. Maturana and Varela's proposition was that

"...living beings are characterised in that, literally, they are continually self-producing."
(Maturana & Varela, 1992pp43)

In terms of applying autopoiesis to social systems, this definition holds two key points which must be addressed.

- Firstly, the authors make the claim that living beings are "literally" self-producing and therefore the different relations and processes described within the theory are a
statement of objective reality\textsuperscript{6}. This position is further supported by Varela's comment that,

"Unless a careful distinction is made between the particular (autopoiesis and productions) and the general (organizational closure and general computations), the notion of autopoiesis becomes a metaphor and loses its power." (Varela, 1981 pp38)

- The second key point of the definition is that of self-production. Self-production, in the context of autopoietic theory has a very specific meaning. It refers to systems where the components of the system participate in the processes of production that produce those same components that themselves constitute the system (Varela, 1981; Maturana, 1981). Therefore autopoietic systems have a circular organisation where the outputs of the system are its own inputs (Mingers, 1995).

Maturana and Varela, have developed a very specific terminology in order to describe particular characteristics of autopoietic systems. Most of these concepts relate to the process by which the system interacts with its environment. Maturana and Varela view things in terms of organisation, structure and unities

"Organization denotes those relations that must exist among the components of a system, for it to be a member of a specific class" (Maturana & Varela, 1992. pp47)

Living beings are characterised by their autopoietic organization\textsuperscript{7}. They differ from each other in their structure, but are alike in their organisation.

"Structure denotes the components and relations that actually constitute a particular unity and makes its organization real." (Maturana & Varela, 1992. pp47)

A unity is more or less an object or entity that is the subject of the study. By discussing or acknowledging a unity, the individual is distinguishing it from its surrounding environment. The

\textsuperscript{6}The notion of objectivity in parentheses will be dealt with later in this chapter, in order to discuss some of the ontological issues involved in applying autopoiesis to social systems. The argument that the theory, as quoted above, represents a claim of objective reality serves to distinguish the original theory from metaphorical applications that will also be discussed in this chapter. It is not intended to represent the assumptions of Maturana and Varela.

\textsuperscript{7}The two spellings of organisation are made more confusing in that the American spelling, organization, naturally adorns any research which is published in the US. As such, in this thesis, where American authors are directly quoted, the spelling of organization has been changed to the English spelling, therefore the word organization only refers to the autopoietic concept.
unity is therefore viewed from a different perspective to the environment, but not necessarily something unrelated. The word unity is regularly used to distinguish an autopoietic system.

Autopoietic systems are typically described as organisationally closed systems due to their self-producing, autonomous nature. At the same time they act like open systems, as they are continuously interacting with their environment. Maturana and Varela account for this relationship through the concepts of ontogeny and structural coupling. The ontogeny of a unity, denotes the history of structural change within that unity, without the loss of its organisation (Maturana & Varela, 1992. pp74).

When considering the ontogeny of two autopoietic systems, the situation of structural change can be viewed from the perspective of either of those unities. Depending on which unity is under study, the other simply becomes a component of the surrounding environment with which that unity is constantly interacting. When these interactions become ‘recurrent’, autopoietic unities can become structurally coupled. Hence there is a history of recurrent interactions leading to a structural congruence between the two unities. Therefore a unity is structurally coupled to its environment and vice versa.

Structural change within an autopoietic system can take two forms, either a change that is triggered by interactions with the environment in which it exists, or by its internal dynamics (Maturana & Varela, 1992). Either way, all changes are structure determined. So although perturbations of the surrounding environment may trigger changes in the structure of an autopoietic system, the perturbations have no control over the results of those changes. These basic concepts remain consistent throughout any discussions of the functioning of autopoietic systems. Maturana and Varela also apply these ideas to the notion of cognition, which leads them to make significant epistemological proposals.

Initially, Maturana and Varela infer that an objective reality may exist, however, it is impossible for us to objectively describe that reality as any description is subject to the constructive processes of our organization (Maturana & Varela, 1980). For Maturana and Varela, the acceptability of an explanation is observer dependent. Maturana (1988a) argues for a position he terms "objectivity in parentheses", that he describes as the observer's explicit acceptance of,

"(a) that as a human being he or she is a living system; (b) that his or her cognitive abilities as an observer are biological phenomena because they are altered when his or her biology is altered,
and disappear with him or her at the moment of death; and (c) that if he or she wants to explain
his or her cognitive abilities as an observer, he or she must do so by showing how they arise as
biological phenomena in his or her realization as a living system" (Maturana, 1988a.pp30)

Maturana and Varela take this position further by suggesting that reality only exists through our
functioning as an autopoietic unity. Therefore, like Berkeley, there is no need to assume that an
external reality exists (Bennett, 1971) at all.

Historically the application of autopoiesis to living systems of different levels of complexity, from
cells through to whole organisms, has not presented any great ontological problems. Taking the
theory a step further to the explanation of human social systems, however, presents several
difficulties in terms of ontology and the accurate identification of concepts, operations and
processes. To complicate matters further, Maturana (1981) suggests that a distinction can be made
between autopoietic systems and living systems. He maintains that

"the notion of autopoiesis fully characterizes living systems as autonomous entities in physical
space." (Maturana, 1981pp21)

Furthermore,

"...we have chosen to identify living systems with only autopoietic systems in the physical space
because this is the space in which we exist..."(Maturana,1981pp23)

These quotes raise the first distinction that must be made with regard to the application of
autopoietic systems to the social sphere; all living systems can be described as autopoietic,
however, not all autopoietic systems can be described as living. This distinction arises because of
Maturana's referral to physical space. Living systems, for Maturana, can only exist in physical
space or be constituted of components that are defined as physical. Autopoietic systems exist in the
space of their components, which can vary infinitely so long as their properties allow the
constitution of the system in the space that they define (Maturana, 1981). Therefore whether a
social system is believed to exist in physical space or not, determines whether it can be conceived
of as a living system or not. The important implication which arises from these observations is that
regardless of whether a social system is perceived to be living or not, it is possible for them to
satisfy the criteria of autopoietic systems and to be understood in terms of the processes described
by autopoietic theory.
By accepting the possibility that autopoietic theory can be usefully applied to social systems, the problem arises of what form does a social system take. For example, does a social system exist in physical space or non-physical space? The non-physical space, in this thesis, refers to objects that are essentially intangible, such as concepts, ideas, feelings and emotions. What follows is a review of the theoretical debate with regard to this issue.

Theoretical Debate

There has been considerable debate regarding the application of autopoietic theory to social systems. It should be noted at this point that the debate has not necessarily centred on the theory's application to organisations, which would constitute an example of a social system, but more commonly to the notion of society.

The main proponents for the theory's application to social systems are Niklas Luhmann, Gareth Morgan who takes an overtly metaphoric stance on the subject and Milan Zeleny who has worked with several people in the development of his ideas, including Kevin Hufford. Other theorists have also made attempts to apply autopoiesis in the social context, however, these works are generally in support of the proponents already cited, as opposed to developing a new theory themselves.

Each of these authors have received their fair share of criticism for various reasons, mostly stemming from ontological and epistemological inconsistencies (Zolo, 1990; Mingers, 1990, 1995). It should be noted that the work of Danilo Zolo is critical of autopoiesis in its original form for epistemological and ontological reasons, and therefore the application of the theory in the social context carries further epistemological and ontological problems. Zolo's criticisms will be looked at in more detail later in this chapter. Other criticisms are aimed at the potential uselessness of applying the theory to social systems. These criticisms are particularly aimed at Morgan's (1997) work.

Discussion around the use of autopoietic theory in social contexts arguably reached prominence in 1992 with a special issue of the International Journal of General Systems which involved a coordinated debate between Zeleny and Hufford as focal authors, and seven rejoining authors. In this debate, the focal authors selected three system contexts for the application of autopoiesis - biological (cell), chemical (osmotic system), and social (the human family). All the participants had backgrounds in systems theory, and, as both the guest editor, Fleischaker, and one of the participants noted, worked with the expectation that
"...completely different phenomena in completely different disciplines are subject to the same laws, can be explained by the same or similar theories, or can be caught in the same type of differential equation" (Geyer, 1992, pp. 175)

This debate was limited, however, in the sense that it didn't really include the works of Luhmann or Morgan in the discussion. The same can be said of debates with regard to Luhmann and Morgan's respective works, with little or no attempt being made in the literature to compare, contrast or combine the approaches. Mingers (1995), in his discussion of the different approaches, also keeps them separate.

It could be suggested therefore, that there are three main perspectives or streams of debate regarding the topic; the sociological perspective of Luhmann, what can be termed the scientific perspective of Zeleny and Hufford, and the metaphoric perspective of Morgan. It is suggested here that none of these perspectives, by themselves, presents a theoretically tenable or practically workable solution to the problem of applying autopoietic theory in social or more specifically organisational contexts.

Before discussing these three perspectives it is worthwhile noting the work of Robb (1992a), Beer (1981), Hejl (1984) and von Krogh & Roos (1995). Robb's supra-human systems are an extension of the use of autopoiesis. He argues that these systems are essentially out of the control of humans and therefore could have detrimental effects on society. Robb's work does have some relevance to the arguments in this thesis with regard to the notion of self-preservation.

Beer's Viable Systems Methodology represents an attempt within systems theory to apply biological theories to organisations. Although this work carries some similarities to autopoietic theory, it is based on different premises and aimed at explaining different phenomena. The early work of German sociologist Peter Hejl, explicitly draws upon autopoietic theory in its constitution which extends, albeit to a lesser extent, to his more recent articles (Hejl 1993; Hejl et al, 1997). The work of von Krogh and Roos is an attempt to apply autopoietic ideas to knowledge and knowledge management in organisations. Much of their work focuses on the effect of language, drawing upon Maturana and Varela's epistemological position to develop a number of propositions regarding organisational knowledge.
The Sociological Perspective

The first perspective or approach to the application of autopoiesis in social systems is that of Niklas Luhmann. Luhmann's voluminous work spreads across several disciplines including politics, law, religion and the arts. I will be focusing on his application of autopoietic concepts to social systems.

Luhmann's approach to the problem is the most sociological and theoretically complete work of the proponents cited. His main text on the subject, titled 'Social Systems', was originally published in 1984, the English translation following in 1995.

Luhmann does not claim that social systems are living systems. In fact he is quite explicit that they are not. He works from the premise that if

"...we abstract from life and define autopoiesis as a general form of system building using self-referential closure, we would have to admit that there are non-living autopoietic systems, different modes of autopoietic reproduction and that there are general principles of autopoietic organization that materialize as life, but also in other modes of circularity and self-reproduction."(Luhmann, 1990pp2)

This position is not inconsistent with the work of Maturana and Varela. However, there are two key points of separation. The first is that Luhmann refers to three different types of autopoietic systems: living systems, psychic systems and social systems. For Luhmann each of these types of system can be represented autopoietically. Maturana and Varela are not so generous in their interpretation of the concepts. The second key point of separation is in the mode of production that Luhmann promotes.

"Social systems use communication as their particular mode of autopoietic reproduction."(Luhmann, 1990pp3)

Luhmann is quite specific about the meaning he gives to communication(s). He posits that these exist as a unity constituted by three elements: information, utterance and understanding (Luhmann,1995a). These elements cannot exist independently of the system as they are co-created within the process of communication (Luhmann, 1990). The important aspect of Luhmann's theory is that the communications to which he refers are of a different level to those which we would normally perceive in conversation. Communication is at a different level from people, thoughts and actions (Mingers, 1995), as for Luhmann communication forms the environment of the social
system. As such, people perturb the social system, however, as elements of the environment, they do not contribute to the systems operations (Luhmann, 1995b).

As such Luhmann has thus conceived of autopoietic social systems as systems in non-physical space defined by non-physical components. Elements occupying physical space, such as people, constitute the environment of the system. This is necessary because it allows sociological theory to switch from the concept of action as the basis for the production, to communication.

"With the concept of action external references can hardly be avoided. An action requires, since it must be attributed, reference to socially constituted complexes: a subject, an individual, for all practical purposes even a living body, that is, a place in space" (Luhmann, 1992 pp71)

This distinction between systems and environment is very important in terms of understanding Luhmann's theory as,

"...the system would never be able to build its own complexity and its own knowledge if it repeatedly mistook itself for its environment" (Luhmann, 1995b pp7)

Although radical, Luhmann's work has several inconsistencies that need to be considered. Zolo (1986, 1990), cites several problems with the theory. The most serious of these stems from his arguments regarding the shortcomings of Maturana and Varela's original work. Zolo notes that

"...he [Luhmann] embeds autopoiesis into his general theory without having dealt with its shortcomings."(Zolo,1990)

The shortcomings he refers to are essentially epistemological in nature, relating to Maturana and Varela's emergent contradiction that the theory is consistent with idealism and epistemological realism at the same time. Zolo's criticisms of autopoietic theory will be discussed in more detail later in this thesis.

A far greater problem with Luhmann's work relates to certain assumptions regarding the boundary of the system. Luhmann suggests that the autopoietic system of communications exists as a unity, or in other words without humans as a part of the system. Although theoretically possible, and satisfactory in terms of the three components of communication acting as a system, such a premise has little explanatory value in terms of organisational change or management in general. The alluring quality of autopoietic theory is that potentially it may provide explanations relating to
human behaviour which can assist in the management of organisations. Although Luhmann's application of autopoiesis to social systems provides an interesting if not radical addition to contemporary social theory, it is difficult to see where it can be usefully applied in this thesis.

The Scientific Perspective

The second approach or perspective on social autopoiesis may be termed the Scientific approach. It is within this perspective that most debate has taken place and into which the arguments of Maturana and Varela are aligned.

This perspective is termed Scientific because the debates have essentially discussed whether or not a social system is autopoietic or not. This is a different position to whether social systems can be seen to be autopoietic, the position that Gareth Morgan puts forward. Maturana and Varela's work falls into this perspective because they too discuss whether social systems are autopoietic, and furthermore would argue that autopoietic theory is a scientific explanation.

"...I shall not claim that what I say is valid because there is an independent objective reality that validates it. I shall speak as a biologist, and as such I shall use the criterion of validation of scientific statements to validate what I say..." (Maturana, 1988b, pp11)

Maturana and Varela have distanced themselves from the application of autopoiesis to the social context. They do not even agree on an appropriate direction to address the problem. Maturana (1980, 1988a) argues that social systems are the medium in which living systems recurrently interact and realize their structural coupling. Varela (1979, 1981) suggests that autopoietic notions of production are not appropriate for all systems and therefore the development of a similar concept of organisational closure is a preferred direction. Both argue that autopoiesis cannot be applied directly to social systems.

Their fundamental concern with regard to social autopoiesis is that autopoiesis, in its original conception, requires that the components of the system, through their operations, further produce the components which constitute the system. When the system under study exists in the physical space of its components, such a pursuit is not so problematic. However, social systems would appear to be non-physical in nature and yet be composed of physical components - people. This of course assumes that social systems are produced by people, unlike Luhmann's position.
Varela, Maturana & Uribe (1974) proposed six criteria that can be used in determining whether a system is autopoietic in its organisation,

"Key Point #1: Determine, through interactions, if the unity has identifiable boundaries. If the boundaries can be determined, proceed to 2. If not, the entity is indescribable and we can say nothing.

Key Point # 2: Determine if there are constitutive elements of the unity, that is components of the unity. If these components can be described, proceed to 3. If not, the unity is an unanalyzable whole and therefore not an autopoietic system.

Key Point # 3: Determine if the unity is a mechanistic system, that is, the component properties are capable of satisfying certain relations that determine in the unity the interactions and transformations of these components. If this is the case, proceed to 4. If not, the unity is not an autopoietic system.

Key Point # 4: Determine if the components that constitute the boundaries of the unity constitute these boundaries through preferential neighborhood interactions and relations between themselves, as determined by their properties in the space of their interactions. If this is not the case, you do not have an autopoietic unity because you are determining its boundaries, not the unity itself. If 4 is the case, however, proceed to 5.

Key Point # 5: Determine if the components of the boundaries of the unity are produced by the interactions of the components in the unity, either by transformation of previously produced components, or by transformations and/or coupling of non-component elements that enter the unity through its boundaries. If not, you do not have an autopoietic unity; if yes proceed to 6.

Key Point # 6: If all the other components of the unity are also produced by the interactions of its components as in 5, and if those which are not produced by the interactions of other component participate as necessary permanent constitutive components in the production of other components, you have an autopoietic unity in the space in which its components exist. If this is not the case, and there are components of the unity as in 5, or if there are components of the unity which do not participate in the production of other components, you do not have an autopoietic unity.

These criteria make very specific the requirements that a system needs to satisfy if it is to be distinguished as autopoietic. Zeleny & Hufford, (1992a) used the six criteria in order to explore the social unit of a family as an example of social autopoiesis. They also explored these criteria through examining a cellular system and a chemical system. Their approach was to discuss each of the key points, as described above, illustrating how the unity of a family satisfied the criteria. There were, however, several limitations in their analysis that the other contributors to the debate clearly argued.
The main limitation of their analysis was the failure to clearly define the elements of the system, i.e., the boundary, the components. This problem was further compounded by the fact that they did not define the components of the system consistently in terms of physical space or non-physical space.

"...the authors [Zeleny & Hufford] must commit themselves to a system constituted in one component space or the other, either physical or social - and they do not. Indeed, they fail even to distinguish between necessary biological relationships and contingent social roles, lumping together 'fathers, mothers, children, wage-earners, homemakers,...black sheep' as family components of equal par." (Fleischaker, 1992a pp167)

Mingers (1992a) points out several weaknesses with Zeleny and Hufford's argument. The first of these relates to the lack of definition, given to important terms such as family and 'spontaneous social order'. Mingers criticizes the use of the six criteria as a methodological tool for the debate, suggesting that the debate has moved on, and both Maturana and Varela have made other clearer statements with regard to social autopoiesis e.g. Maturana, (1988a), Varela, (1981). Another element of Zeleny and Hufford's (1992a) paper that drew considerable criticism was their suggestions that not only are social systems autopoietic, but that all autopoietic systems are social systems. This position drew criticism from all the other contributors.

Zeleny & Hufford's (1992b) response to these criticisms was interesting as the arguments they put forward related mostly to what they saw as a limited view or set of assumptions regarding the domains of operation and what constituted the boundary of the system. The examples they gave of this limited perspective were the objections to their mixing of operational domains,

"We cannot commit ourselves to one 'domain' or to one component space; that type of science, a science restricted to a single domain of inquiry, has already passed." (Zeleny & Hufford, 1992b pp241).

In essence, Zeleny and Hufford put forward a call for a wider interpretation of the theory, suggesting that Maturana and Varela have only brought the theory so far and, as such, it is time for a re-interpretation.
The Metaphoric Perspective

Gareth Morgan's metaphoric use of autopoietic theory represents a third approach that can be identified. It is the simplest and least problematic of the three perspectives. Morgan (1997) acknowledges the reservations Maturana and Varela have regarding social autopoiesis, preferring to extrapolate three "intriguing implications" which he suggests are useful in developing an understanding of organisation.

The first of these relates to the organisation's organisationally closed relationship with its environment, the second to the maintenance of identity and the third to explanations of evolution, change and development which should, Morgan argues, encompass the organisation's recurrent relationship with the environment (Morgan, 1997). The autopoietic metaphor, for Morgan, is one among many different metaphors that can be applied to the problems associated with managing organisations. Morgan goes on to extend the use of autopoiesis into the notion of patterns between the organisation and the environment, including the work of Kauffman (1993) and Gleick (1987).

The criticisms leveled at this approach to the use of autopoiesis in social systems are not so much related to Morgan's work, as to the notion of metaphor itself. Mingers, commenting on Morgan's work states that,

"In overall terms, using autopoiesis metaphorically is reasonably unproblematic - one does not have to agonize over the deep ontological problems. Equally, however, the results are merely metaphoric and have no greater claim on our attention." (Mingers, 1995. pp151-152)

Varela (1981), has a similar view. Interestingly, Luhmann also makes a statement, in the context of applying a systems theory from one discipline into another area of knowledge.

"...one has to refrain from transferring purely metaphorically or by analogy the knowledge of one discipline onto other areas of reality." (Luhmann, 1995b)

Here it is important to examine what is meant by the notion of metaphor. As already noted, Maturana and Varela's original conceptualization of the theory was an attempt for a literal representation of what it is to be a living being, and therefore autopoietic systems, for them, literally exist. However, the distinction between whether a particular interpretation of a subject, is a literal
interpretation or a metaphoric one is very 'grey'. To use Maturana and Varela's terms this distinction exists in the eye of the observer.

It is difficult to assess the metaphoric nature of the comments above. Are the authors referring to a metaphoric representation of a literal subject, or are they referring to a metaphoric interpretation of a theory? This distinction is important because to argue the useful/lessness of autopoiesis as a literal way of being creates problems of system reification. A system, is only a way of looking at a set of relationships, it is not a literal representation of the way things are (Checkland, 1988). To view the system other than as a way of seeing things is to misconstrue the notion of a system, autopoietic or otherwise.

"...by utilizing the metaphor of system and expressing the metaphor in a well-defined form as a purposive entity...allows the systems modeler to gain a conceptual advantage by enabling her/him to present this form back to a socially constructed reality and discovering about that reality through the process of comparison." (Davies, 1992, pp. 605)

The difficulties involved with a metaphoric interpretation of the theory can only relate to the rigor, or lack there of, in the methodological approach of the researcher attempting to test the theory in practice. Therefore to suggest that because Morgan's use of autopoietic systems is merely metaphoric it should have no greater claim on our attention (Mingers, 1995), is over-dismissive. The relative value of an approach to the application of the theory could only be measured against the individual's reason for applying the theory in the first place, and none of the people who critique the metaphoric use of autopoiesis make their position clear in this regard. It has been clearly illustrated (Kuhn, 1962) that science is not based upon an unmoving rock and cannot assure us of the objectivity which the positivist stream of researchers would appear to seek.

It is also fairly clear that apart from Luhmann's conceptualization of an autopoietic social system, there are not many people willing to suggest that social systems are literally autopoietic. The discussion above provides many of the reasons why this is the case. The positivist stream of research has not, however, provided us with a useful framework for the application of the theory in the social context. This comment is premised upon the assumption that regardless of whether social systems are autopoietic or not, the ideas underpinning autopoietic theory could provide useful tools to conceptualize, model and help make decisions in organisations.
Criticisms of Autopoiesis

The ontological and epistemological problems described by Zolo (1990) and Mingers (1990, 1992b) provide grounds for an evaluation of the perspective above. It should be considered in this review, that the focus of critique for these authors is the biological context which autopoiesis was originally applied to, not the organisational context that will become the focus of this thesis. I am noting this to avoid confusion between the notion of an *organisation*, in the sense of a social system (Parsons, 1951), and *organisation* as the term used by Maturana and Varela (1980) to denote the relations between components which distinguish the system as a unity.

Mingers, in his philosophical examination of autopoietic theory, suggests that autopoietic theory is, with minor modification, philosophically consistent with the critical realism of Bhaskar (1989). In his argument for this position, he promotes the similarity of the two respective methodologies used and the notion that although people have no access to an objective reality, due to the structure determined nature of their nervous systems, there is a reality 'out there'. As alluded to above, Zolo's (1990) main concerns relate to Maturana and Varela's apparently contradictory position, which places idealism and realism together.

"Their [Maturana & Varela] idealistic metaphysics is seen to be co-extensive with epistemological realism. But the main claim of epistemological realism is that the external world exists independently of cognitive processes." (Zolo,1990p67)

This position has also resulted in many commentators placing autopoietic theory within the radical constructivist paradigm supported in the work of von Glaserfeld and Smock (1974). They write,

"Radical constructivism does not deny ontological reality - it merely denies that a cognitive organism, whose knowledge derives from making distinctions and operating with the resulting 'differentiatia', can come to know any ontologically 'real' world" (von Glaserfeld, 1989p18)

Although radical constructivists do not deny the existence of some form of objective reality outside our "perceptual and conceptual structures" (von Glaserfeld, 1989b) generally speaking, radical constructivism falls into the category of an idealist philosophy. Idealism, in its various forms has been widely critiqued. Johnson (1996) puts this argument succinctly, in one of his many critiques of radical constructivism. He suggests that
"...in its rush to sever all connections to a world beyond the isolated subject, radical constructivism has neglected to reserve for itself a place from which to speak" (Johnson, 1996 pp14)

The problem is that if we can 'know' nothing other than our thoughts, then it becomes very difficult to account for who or what is it doing the 'knowing'? This is the argument of the realist, who, at the other extreme would suggest that the individual can have access to an independent world and as such the constructivist argument is unsustainable. Finding an answer to this quandary is not a problem - the problem is that there are too many answers. The significance of the constructivist/realist debate to this thesis, relates to its effect upon the assumptions which can be attached to autopoietic theory.

Extreme idealism creates problems less from the perspective of its contradiction with realism than through the notions of structural coupling and the embodied cognition which Varela et al (1992) develop in considerable detail. To take the idealist position does not necessarily preclude the existence of an external reality (in the same way as von Glaserfeld does), regardless of the processes of description which Maturana and Varela support. The extreme idealistic position, however, presents problems on the grounds that the processes of structural coupling and ontogenic drift, which form significant elements in autopoietic theory overall, become very difficult to account for. To suggest that there is nothing external to the autopoietic process, which is the implication of the above, further suggests that the processes of structural coupling with the environment are actually internal to the system. As such, autopoiesis becomes solipsistic, a position which Maturana and Varela (1992) later suggest is a trap, as this position

"...does not allow us to explain how there is a due proportion or commensurability between the operation of the organism and its world" (Maturana & Varela, 1992 pp134)

It is difficult to ascertain the position that Maturana and Varela hold with respect to realism. Effectively they have at different times argued for a position closely aligned with Berkeley and at others, a position that is similar to that of Bhaskar. Due to the ambiguity surrounding Maturana and Varela's position on these matters, the pursuit of a consistent philosophical position becomes a difficult exercise. Mingers (1990), suggests that the position of critical realism is perhaps the most useful interpretation of autopoietic theory. Unlike the realist position, critical realism accepts and

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8 It should be noted that the idea of structural coupling being viewed as internal to the system is not entirely inconsistent with autopoietic theory in its original form. The reasons for this will be explained in the later sections of this chapter and are central to the notion of an organisation. However, it cannot be suggested that structural coupling is completely internal to the system and therefore there remains a need for an external environment to which the system may couple.
accounts for the structure-determined nature of the individual's nervous system, and therefore the resultant lack of access the individual has to an external reality.

Accepting the critical realist position, there are a number of implications that need to be examined. As the critical realist position accepts that 'reality' can only be accessed in parentheses, to adopt Maturana and Varela's language, the question of whether social autopoiesis can usefully be viewed from a metaphoric perspective or not becomes a redundant question. The implication is that it is the only way in which it can be viewed. The processes that are described within autopoietic theory create a situation where, to a greater or lesser degree, the 'observer' views their environment in terms of metaphors. The accuracy to which these metaphors reflect 'reality' is inconsequential to the observer, except in extreme circumstances where it could be suggested that their ability to realise autopoiesis is jeopardised. Hejl (1984) notes this point to some degree.

In this thesis, it will be argued that the category of social systems known as organisations cannot be seen to be autopoietic themselves. This is largely for the reasons outlined above in the Scientific research stream. Essentially the components of the social system (people) do not constitute the system. However, the position taken here is that many of the processes described within autopoietic theory can be seen to apply within the social context. Furthermore it will be argued that by viewing social systems as a function of these processes, useful insights into the functioning of organisations may emerge. Social systems or organisations are not autopoietic, in the sense of Luhmann's (1995a) interpretation; rather the range of processes that constitute autopoietic theory can provide a useful way to look at the interactions which take place within organisations and potentially provide some explanations of those interactions.

Whitaker (1995) has proposed that a more sustainable direction for research on the social applications of autopoietic theory may be derived from the view that social systems are composite unities of (human) autopoietic systems. Peter Hejl (1980, 1981, 1984) has to some degree adopted this approach. It is also consistent with at least one of Maturana's comments on the nature of social systems where he states that,

"...a collection of interacting systems that, in the realization of their autopoiesis through the actual operation of their properties as autopoietic unities, constitute a system that as a network of interactions and relations operates with respect to them as a medium in which they realise their autopoiesis while integrating it, is indistinguishable from a natural social system and is, in fact, one such system". (Maturana, 1980, pp11-12)
It is important to note that Maturana does not refer to humans in the definition above, preferring to limit the definition to 'interacting systems' or autopoietic unities. In fact Maturana describes a multicellular organism as a social system. For Maturana, whether the individual belongs to the particular social system or not is dependent upon whether the interlocking behaviors that constitute the social system act as a medium for the individual to realise their autopoiesis. Maturana's position here is useful in that it provides an account of how individuals may be members of several social systems at any one time; a problem which Mingers (1992a, 1995, 1996) identifies on several occasions. It also provides a clear definition regarding his position on the nature of social systems.

Hejl's work is significant, as it is consistent with the idea of social systems as composite unities of human autopoietic systems. His work attempts to combine sociology with systems theory in order to develop a scientific description of society and social systems.
Part 2 - Social Systems as Composite Unities

Hejl on Society

In order to apply autopoiesis usefully to the notion of management in organisations, it is necessary that any application of autopoiesis to social systems should include humans as fundamental components of the system. Hejl’s perspective on the application of autopoietic theory to social systems has developed over the past fifteen years and consequently exhibits some developmental changes.

Initially his work (Hejl, 1980, 1981, 1984) follows that of Maturana and Varela quite closely, while more recent works (Hejl, 1993, 1995, 1997) move towards a constructivist position, with a focus on the social construction of reality. Underpinning much of his research program is the assumption that the combination of social theory with elements of systems theory can provide a useful avenue towards making explanations of social phenomena.

Hejl begins his examination of social systems through a discussion of the notion of ‘observer’ (Hejl, 1980). This examination follows Maturana and Varela’s original discussions very closely and allows Hejl to expound his epistemological position. This examination results in the suggestion that the “observer is the medium of all knowledge”(Hejl, 1980 pp152). Observers know the world through their interactions with it, and as such, Hejl distinguishes two interconnected domains of interaction:

- the domain of interactions with ‘nature’ or objects, and
- the domain of social interactions. (Hejl, 1980)

These discussions lead Hejl to describe society as

"...the process in which individuals interact with one another and with their natural (real) environment under the primacy of self-preservation." (Hejl, 1980. pp176)

There are several significant points to be unpacked from this definition. The first is the centrality of humans to the production of society. The second is the ontological statement that is made regarding the ‘real environment’ and the third is the primacy of self-preservation, which refers to the maintenance of the autopoietic system as a unity. None of these distinctions require a modification
to Maturana and Varela's original work, nor compromise the ontological and epistemological peculiarities of the theory.

In the context of this thesis, the centrality of humans to a notion of society is significant. From a pragmatic perspective, a theory relating to social interaction should provide some explanations of the processes by which people interact. As discussed above, the work of Luhmann (1995a) excludes humans from the social system, describing them as part of the environment of the system. Luhmann's position is difficult to apply to the organisational context for this reason. Any framework that is developed in this thesis should have humans as a central component of the sets of relationships that are described. Hejl (1981) examines the implications of this position.

"...that any theory is brought forth by the selfsame individuals who, being individual biological systems, are the basic elements of the theory of social systems, and that therefore, when any statements are made within the field of observation about the individuals' scope of perception and action, it becomes necessary these statements ex ipso to the producers of the theory themselves." (Hejl, 1981, pp175)

Hejl makes the above statement in the context of comparison between his individual-based conceptualization of society and the more conventional functional-structural model within sociology. His point is that the more widely accepted functional-structural theory doesn't adequately deal with its own frame of reference. He makes the comment that

"...the theory fails to establish, as it were objectively, what belongs to complex systems and what doesn't, and it fails to define the preconditions for their functioning, the relations between their elements etc." (Hejl, 1981, pp175)

The application of autopoietic theory to the social domain clarifies these problems through its analysis of these different elements. The flow of logic described leads Hejl to the definition of society described above. As a consequence the notion of a social theory has the following characteristics;

- it is a product of an observer
- it is never completely objective
- it represents a process, not an entity
It is interesting to note that for Hejl, the above definition of society could be applied to other than human societies, however, he doesn’t describe what form these may take. He also goes into considerable depth on the notion of a social system as a distinctly different yet related medium for understanding social interaction.

The ontological statement Hejl makes regarding the ‘real world’ also provides a pragmatic dimension to the theory. At a simplistic level it is difficult to consider the effect of environmental perturbations when the environment only exists through the realization of the systems autopoiesis. Hejl’s position allows us to view people as if they were autopoietic systems within a ‘real’ environment that is both changed by and influences the behaviours that people, within organisations, exhibit. This position does create some confusion within Hejl’s work, however, to the degree that although he points out there is no objectivity, he continuously refers to the ‘real world’ as an independent object. This leads me to suggest that Hejl’s perspective sits within the positivistic perspective described earlier in this chapter, i.e. he is making descriptions of the way things are, as opposed to the way in which they may be seen. Having said this, Johnson’s (1996) arguments with reference to the radical constructivism of von Glaserfeld could also be pertinent with respect to the self-referential epistemology underpinning autopoietic theory.

Given that the primary purpose of this thesis is to observe and interpret a number of experiences within organisations, the development of an ontological basis for society is beyond the scope of the research. The assumption here is that regardless of the actual nature of the phenomena, there is a heuristic value in the combination of different theoretical approaches in the observation of problematic contexts.

The third and perhaps most significant feature of Hejl’s definition is the primacy of self-preservation. The subjugation of human interaction to the fulfilment of self-preservation has a number of important implications for the processes of organisational, and it can be argued worldview change. In Hejl’s work, the primacy of self-preservation is most evident in his discussions of evolution and societal history. Following his previous theoretical developments (Hejl, 1980, 1981), he briefly examines the evolutionary implications that can be drawn from the self-referential nature of autopoietic systems. Here the focus of Hejl’s work explicitly moves from society to the social system.
Hejl on Social Systems

Hejl defines a social system as,

"...a group of living systems which are characterised by a parallelization of one or several of their cognitive states and which interact with respect to these cognitive states." (Hejl, 1984, pp. 70)

He points out that his definition of a social system is more restrictive than that applying to a social domain. The requirement to interact in a particular way provides the distinguishing feature of a social system. For Hejl, social systems exist within social domains, emerging and dissipating with the emergence and dissipation of the parallellised cognitive states. In Maturanian terms, Hejl, when discussing socialisation, is referring to ontogenic drift. He suggests that this process

"...generates, on the one hand, a reality of rather stable 'objects', and on the other, a perception of other centres of activity of a complexity of behaviour comparable to that of the perceiving system... [or] other perceiving systems of the same complexity." (Hejl, 1984, pp. 68)

Hejl contends that due to difference between these two types of perception, it is necessary for the individual to take part in a process of mutual interactions that result in what he describes as a partial parallelisation of the interacting systems. This seemingly relates very closely to Maturana and Varela's notion of a consensual domain. The example Hejl uses to illustrate his point is that of a football team; when the team is playing it constitutes a social system. However, when it isn't playing the game it is not a social system or at least not one of that category. The team exists within a social domain that makes possible the distinction of the rules and the notion of playing football from all the other social interactions that may be happening.

As noted above, one of the most significant aspects of Hejl's definitions of both society and social systems is the primacy of self-preservation. For Hejl, the invention of society, and the social systems within it, is a necessity for survival arising from human evolution. Here there is an assumption that moves evolution away from its more classical roots to include autopoietic theory and therefore the sets of relations peculiar to the theory. He points out that,

"Each evolutionary step 'defines', just like every state of the system, a possible range of new interactions, hence a new niche. If this niche can actually be 'realised', i.e. if the living system is
able to maintain itself (its autopoietic organization) through interactions according to its new possibilities, the system will survive, and a step in evolution will have been taken.”(Hejl, 1984, pp66)

The significant aspect of this process is that the autopoietic system does not require a change of environment for an internal change to take place - change is environment independent. Much of Hejl’s work here is consistent with that of Maturana and Varela, in particular the notion of autonomy developed in more detail by Varela (1979). The implication of this is that through continued evolution, humans’ cognitive capacities have steadily increased and, with this, the ability to create their own sets of reality is made possible. For Hejl this produces two consequences;

1. Environmental triggers, which perturb behaviours appropriate to continued autopoiesis, are selected more from the ‘created reality’ than the ‘independent reality’, as such it becomes difficult for the system to select ‘adequate’ behaviours for the maintenance of autopoiesis. Therefore the evolution of higher cognitive capacities may present a danger for the system.

2. The ability to generate other realities presents the system with a competitive advantage in relation to other systems that lack this capacity as it increases the systems ability to secure the “occupation of new niches”.

Hejl suggests that these consequences present a paradoxical situation where an increase in the cognitive capacity of the system, although initially providing a competitive advantage, can also present the system with a source of danger. In response to this problem the phenomenon of society emerged. This evolution, allowed for

“...channelling of the potentially dangerous effects of our growing self-referential brains through the ‘invention’ of myths, religions, art, and finally science, but it also turned the dangers into factors of coherence.”(Hejl, 1984, pp67)

More detailed discussion of the ideas above is beyond the scope of this thesis. However, the relevance of the above discussion relates to Hejl’s point that social interaction is directly related to the individual’s ability to maintain their autopoiesis. This point has a number of implications, the most obvious of which is the temptation to view social systems as autopoietic.

Hejl, like many whose ideas have been described in this chapter, will not be drawn into the suggestion that social systems are autopoietic. Again this is based on the observation that the components of the system may choose to no longer be a part of the system and in fact may be
members of several social systems at once. This leads Hejl to discuss in some detail the differences between the notions of self-organisation, self-reference, self-maintenance and syn-reference. His discussion of these different, yet related notions does much to clarify his position with regard to social systems. His position in relation to these concepts and the social domain can be summarized as the following:

- **Self-referential systems** – systems which organize the states of their components in an operationally closed way.
- **Self-maintaining systems** – are systems in which self-organizing systems ‘produce’ each other in an operationally closed way.
- **Self-organizing systems** – are systems that, under proper conditions, organize themselves in such a way as to form highly standardized systems of a particular class.
- **Syn-referential systems** – are systems that are constituted by components, i.e. living systems, that interact with respect to a social domain (Hejl, 1984).

Hejl distinguishes between autopoietic systems, as conceptualized by Maturana & Varela, and social systems via the definitions above. As such his position is one where autopoietic and social systems represent two distinctly different yet related categories of systems.

The last aspect of Hejl’s work to be presented here is his conceptualization of the boundary of a social system. This issue is significant due to the need to remain consistent with the epistemology that has been developed. He concludes this issue by stating that the boundary of the system is constituted through the interactions of the components (people) (Hejl, 1984) within the system.

“If we want to know where the boundaries of what we take hypothetically as a social system are, we have to observe as well as ask the individuals who constitute it what their interactions are and how they ‘see’ (define) the reality of the system (or the systems) they constitute.” (Hejl, 1984, pp70)

This point has a number of consequences for the way in which research is undertaken in the organisational context. Given that the research to be reported here was underpinned by a systems approach to viewing organisations, there are any number of sub-systems which may be construed to lie within the overarching system termed an organisation. Hejl comments that by viewing the boundary of the system in the way described above, we are able to
"...define society as a network of interlinked social systems with the individuals as nodes". (Hej, 1984pp70)

This conceptualization allows for the fact that people participate in any number of social systems at any one time and large corporations would thus include a wide range of different social systems in which people may interact. Therefore, when researching a particular subject or issue within an organisational context it is necessary to determine the boundary of the interactions. The corporation under study in this thesis was composed of a large and continuously changing number of business units. Many of these business units were composed of a number of social systems, and therefore the way in which the boundaries of the social system were determined had a direct effect upon the way by which the research topic was understood.
Part 3 - Towards an Autopoietic Perspective on Organisation

Thus far there are perhaps two conclusions that can be drawn from the material reviewed, that may contribute to the emerging “frame”.

- Social systems in themselves are not autopoietic. This conclusion is based upon an application of the formal aspects of autopoietic theory i.e. biological. The issues noted in the earlier sections of this chapter with regard to the components of the system producing the system, or in this case organisation cannot be overcome. Therefore in a formal sense organisations are not autopoietic systems and the theory would have limited value in the organisational context if organisations are viewed as reifiable entities.
- Processes of social interaction can be usefully seen to involve and be constituted by many of the processes described within autopoietic theory. Although the formal dimensions of autopoietic theory would not appear to apply directly to organisations, the phenomenological implications that emerge arguably do. If organisations are viewed as non-reifiable entities distinguished by people as a part of their ongoing autopoietic process, then arguably the processes that contribute to their distinction have an impact upon survival and operation.

Accepting these two observations, the “frame” through which the issues and experiences of the remainder of this thesis will be discussed, can now be described.

Epistemology

The epistemological perspective adopted here could best be described as pragmatic constructivism, which can be regarded as consistent with the notion of ‘objectivity-in-parentheses’. For the purposes of this thesis, the validity of truth claims resides with the ‘observer’ and cannot be known with any greater objectivity than that. From this perspective there is an independent reality that exists beyond the structure-bound cognitions of observers. This reality is described through metaphors that may or may not resemble ‘an independent reality’. The reason for the inclusion of an independent reality is as follows: If one is to observe organisational phenomena as if they are constituted through the processes described in autopoietic theory, it is much easier to assume that there is ‘something’ to which people can structurally couple, an environment which perturbs structure-determined changes of state in the people being described. Without this conceptualization, the metaphor becomes solipsistic in the extreme.
The question therefore, of whether organisations are autopoietic or not, is really the wrong question. A more appropriate question would be; what can be learnt by viewing organisations as if they were autopoietic? The narrative from this point may accordingly be viewed as consistent with the first of the three metaphoric approaches described by Tsoukas, (1993). He has suggested that there are three ways in which metaphors and analogies have been used in organisational theory.

- Metaphors as ways of thinking
- Metaphors as dispensable literary devices, and
- Metaphors as potential ideological distortions

The first of these perspectives and the one which is closest to the way in which metaphor will be used here, is based mostly upon the work of Morgan (1997) and his various collaborations (Burrell & Morgan, 1979; Morgan & Smircich, 1980). Within this perspective, the validity of using metaphors as the basis for scientific knowledge stems from the assumption that

"...metaphors are subjective images of a particular domain and they are based on certain paradigmatic assumptions which are in themselves metaphor dependent" (Tsoukas, 1993pp325)

Tsoukas argues that it is possible for metaphors to provide insights that yield scientific knowledge via the use of the structure-mapping theory of analogy. He suggests that this theory provides a methodology for the development of metaphorical insights by acting as a bridge between the two languages of metaphor and science. Autopoietic theory, as it is interpreted in this thesis, provides the interesting position of a metaphor which recognises and includes its own 'metaphoricity' as part of the theory, yet also allows for descriptions of the interactions which take place between the individuals under study. Its creators also suggest that it is a scientific theory based upon scientific method (Maturana 1981) and therefore qualifies as scientific knowledge. In many ways this point converges with that of Hejl's (1980) research program. Hejl notes that there is no consensus between sociologists as to how 'society' can be described and hence understood in a scientific way. He goes on to point out that the

"...scientific method does not allow for an objective description of an observer independent reality. Its descriptions presuppose a domain of consensus shared by the observers involved" (Hejl, 1980pp147)
The authors above are arguing that a metaphoric reality or description of reality is as ‘real’ a description as can be had. The next section will explore this point in more depth.

**Ontology: Organisations as Systems**

In this thesis, organisations will be viewed as systems and therefore subject to the assumption, that by studying the organisation as a whole it is possible to observe phenomena not seen in the parts (Bateson, 1980). Having said this, to attempt the development of an autopoietic perspective on organisation from an extreme holistic position would be to misinterpret autopoiesis in its original form.

The problem is that by applying autopoiesis to the social context, the attempt is being made to describe the relationship between two distinct logical levels; that of the individual and that of the organisation. Organisations, in this thesis, will be viewed as elements in a non-physical environment that emerges through the functioning of internal correlations in the nervous systems of people. In order to make sense of this relationship it is necessary to take an extra step back from viewing the organisation as separate entity, to viewing the combination of organisation and individual as composing a single system. If one was to approach this problem from a reductionist perspective, the individual would become the unit of study. The implication of this assumption would be that the individual’s behaviour would be considered from the perspective of their internal correlations, with minimal consideration given to the environment (potentially organisational) that perturbed them.

An holistic approach would be equally limiting, as the focus for study would be the emergent properties arising from the multitude of relationships that may be distinguished. The process by which these properties emerged, however, would remain mysterious. Within the systems literature, the process by which emergent properties emerge is not really dealt with, it is just assumed that they do (Hejl et al, 1997). In this chapter neither the emergent properties nor the components of the system are discussed. Rather, the focus for study is the process through which these two notions influence the state of each other. The organisation, as Maturana observes, represents the environment or medium in which humans realize their autopoiesis. As such, it represents a source of perturbation that may trigger structure-determined changes to the individual. At the same time, individuals, through their interactions with others, produce sets of recurrent interlocking behaviours, which over time may become distinguished by observers as an organisation. Therefore there are literally multitudes of distinctions that may be considered in research of this kind. In other
words the formal aspects of autopoietic theory in the sense of neural functions based upon interactions with the environment, give rise to the phenomenological dimensions in the sense of the observations made about those interactions and the behaviours that result from them.

The observation of interactions is possible while ever the observer is able to distinguish one entity/unity (individual or organisation) from another entity/unity (individual or organisation). The observer is able to make distinctions about a range of different interactions, i.e. individual / individual; individual / organisation; organisation / organisation etc. This list can easily be added to when the observer considers themselves in these interactions.

It should be noted, however, that the nature of modern organisations is making this task more and more difficult. At the time of writing, the case study organisation, to be described in detail later in this thesis, was involved in 52 joint-venture or strategic alliance partnerships. Each of these entities was structured differently in terms of the way that people participated in them. Some joint-ventures were nothing more than a legal entity, with little to no interaction between participants; others were wholly composed organisations with people from both, or all, parent companies actively participating in its operation. As a consequence of this conflagration of relationships, it was almost impossible to distinguish what constituted the organisation and what didn’t (if the organisation is defined by the people within it). Accepting that this situation is not a transitory state but rather an indication of the way in which organisations will be composed in the future, more traditional conceptualizations of organisations, such as,

"...stable associations of persons engaged in concerted activities directed to the attainment of specific objectives." (Bittner, 1965pp239)

will become less and less appropriate to the new fuzzier structures.

A major distinction that needs to be made in the present development of the conceptualization of organisation, is that humans exist in physical space whilst organisations are represented in non-physical space. As such, while humans may distinguish organisations (a phenomenological impication), organisations are unable, as an entity, to distinguish anything, as they are a distinction themselves (a formal implication). The perceived ability of an organisation to distinguish something from its environment is nothing more than a description given by an observer, it does not represent an internal correlation of the system (organisation). The distinction between changes in the physical space and those that occur in the non-physical space, are analogous to the two logical
levels of the composite systems that are humans and organisations. Humans, as multicellular organisms, represent a composite unity at one logical level and exist in physical space. Organisations, defined at a higher logical level, are composite unities distinguished by humans and exist in non-physical space. Figure 3.1 below, is an attempt to graphically represent the relationship described.

![Diagram](image)

**Figure 3.1. The Relationship Between Composite Entities in Physical and Non-Physical Space.**

The organisation emerges as a distinction that describes the interlocking sets of behaviours between humans in the physical space. As such, the organisation exists in a non-physical environment created by the individual, yet against which the individual orients their behaviour. The non-physical space exists as a function of the internal correlations of the nervous system. For the individual, there is little difference between the way in which the physical environment triggers structure-determined changes and the way in which the non-physical environment triggers structure-determined change. The individual behaves as if the organisation existed in physical space with physical characteristics. In the context of the internal correlations of the nervous system, both are real. The diagram above is therefore a little misleading in that it depicts the organisation as a separate entity, with a relationship to the autopoietic systems in the physical space.
Human (as an autopoietic system in physical space)
Organisation (as a distinction in non-physical space)

Figure 3.2 Embodied Conceptualization of the Non-Physical Space

In Figure 3.2, the organisation is no longer an entity external to the individual, it becomes an embodied aspect of the individual’s worldview, both influencing and being influenced by the continuous functioning of internal correlations within the individual’s nervous system. Consequently the formal dimensions of autopoietic theory in the sense of the biological functioning of the autopoietic entity are inextricably linked to the phenomenological dimensions of the theory through the structure-determined functioning of the nervous system.

If this particular conceptualization is accepted, then there are a number of other questions that may be explored. For example, if the organisation is viewed as a medium in which autopoietic systems realize their autopoiesis, how can the social system be internal to the individual?

The initial confusion that arises from this question can be overcome through a more clearly defined notion of worldview. From an autopoietic perspective, an individual’s worldview is relative to the observer. The observer could be the individual themselves or an outside observer watching the individual. What the observer sees is the behaviour of the individual. An individual’s worldview is therefore just as much a function of the observer as it is a function of the individual’s nervous system (Kay, 1997). Consequently, it is important to separate the behaviors of the individuals, from the descriptions of those behaviours. As already stated, the organisation is a description or, in
Maturana and Varela’s language, a distinction that allows the individual to distinguish a particular set of recurrent interlocking behaviours from all the other behaviours that they may observe. The behaviours take place in the physical space, the description in the non-physical. As such the behaviours, as they occur in the physical space could reasonably be described as a medium for the realization of autopoiesis, whilst the organisation remains non-physical and specific to the internal correlations of the individual’s nervous system. The distinction that must be made between the different spaces in which behaviours and descriptions take place, and the mode by which they are produced must remain consistent if the “frame”, as it is developing above, is to have validity.

It can be argued that Zolo’s (1990) criticisms of both autopoiesis and any work that has followed on from it, are the result of confusing both the spaces and modes through which an individual’s reality becomes known. The apparent contradictions in epistemology and ontology described by Zolo assume the existence of only one space and mode through which the nervous system may be perturbed and consequently through which autopoietic theory may be interpreted. The emergence of the dichotomy between realism and idealism as described by Zolo need not necessarily exist if a multiple of spaces and modes for the production of these phenomena is admitted as part of the “frame”.

The development of a “frame” through which to discuss organisational phenomena is not, by itself, particularly exciting. The value of such an exercise lies in its application to a particular issue. The work of both Maturana and Hejl would suggest, although for different reasons, that the functioning of social systems is linked to the survival of the individual. This may provide some justification for the considerable amount of theorizing that relates to the continuance of organisations or ‘organisational survival’. The notion of organisational survival, or self-preservation carries with it many assumptions that are inconsistent with the conceptualization of organisation described so far. It does, however, provide an interesting context for discussion through the “frame” described above and provides a focus for the research described in this thesis.

In the next and last section of this chapter the notion of organisational survival will be discussed through the “frame” described above.
Organisational Survival

The notion of organisational survival, as it is generally discussed in management literature (Collins and Porras, 1994, De Geus, 1997), cannot be described in a manner that is conceptually coherent with the framework developed in this chapter. The reason for this is that the complexities of the metaphors used to examine this phenomenon do not provide descriptions of the different spatial contexts and modes through which organisations are produced.

It is not possible to cover all the attempts that have been made to discuss organisational survival in this thesis. Put simply most work relates to the way in which organisations adapt to their environments (Morgan, 1989). Smircich and Stubbart (1985) propose three perspectives on the organisational environment,

1. as an objective, unambiguous reality;
2. as an independent domain that at best may be perceived, and
3. as an enacted or socially constructed domain that is as much a consequence of language, ideas, and concepts as it is of the ‘reality’ to which these ideas relate.

The third of these perspectives is perhaps the closest to the “frame” developed in this chapter, however, it also falls short of accommodating the different modes of production that underpin organisational processes and over simplifies the nature of the organisational environment.

Fenton Robb’s (1989) discussion of what he terms supra-human systems is one of the clearest discussions on the survival of autopoietic social systems. He focuses on the constitution of higher order systems, based on autopoietic theory. In short, he theorizes the existence of systems that, although requiring humans for their creation and maintenance, are beyond the control of the humans themselves. This leads Robb to an almost doomsday type conclusion where these supra-human systems, acting autopoietically, cause the destruction of the human race as a function of their need to maintain autopoiesis. Robb reaches this conclusion in the following way. He distinguishes between autopoietic systems at different logical levels. At the base level, autopoietic unities can become coupled in a common domain and therefore at the same logical level. He points out that the
"...coupled structure is not autopoietic; rather... the whole which becomes apparent to an observer [is] properly designated a 'colony' and the unities which gave rise to it called members" (Robb, 1989pp52)

Robb suggests, however, that through the interactions involved in the coupling of the unities, a new unity can arise that operates at a different logical level; this occurs through the loss of identity of the individual unities.

"The system so generated becomes autopoietic and the unities which comprise it are properly labelled 'components'. The successive combination of autopoietic unities in ever higher domains enables autopoietic systems of many orders to be generated" (Robb, 1989pp53)

Supra-human systems, it should be noted, are not necessarily analogous with organisations. Robb makes the point that supra-human systems are beyond human understanding and control (Robb, 1992a). Robb's thesis with regard to the notion of supra-human systems has been critiqued quite convincingly by Mingers (1989) whose arguments essentially return to the same critique as that described above. Humans, as autopoietic systems, do not constitute the components of social systems in the same way as cells can be suggested to be a component of metacellular organisms - new logical levels do not necessarily emerge from the ones below them.

Although Robb's thesis has limitations, it provides an illustrative perspective on the notion of self-preservation. Apart from Mingers' critique, it can be argued that Robb's thesis lacks applicability to the organisational context as it is developed here, due to placing the non-physical space outside the internal correlations of the observer.

The work of Walter Kickert (1993) on the application of autopoiesis to public administration presents another attempt to develop the idea of organisational survival. Kickert is explicit regarding his application of the theory, pointing out that,

"...from the viewpoint of usefulness, it is not so important whether a useful idea is an accurate translation of the original natural scientific model, but rather whether the idea is interesting and relevant for administrative science" (Kickert, 1993pp263)

Kickert puts forward two models that he terms,
- Dynamic Conservatism of Bureaucracy, and
- Autonomy and Self Governance
In the first model, Kickert, drawing on the work of Kaufmann (1976), suggests that the application of the autopoietic model would show government institutions to be continuously reproducing the bureaucratic form of their organisation. Furthermore, he suggests that by applying the notion of ‘living’, bureaucracy appears to possess perpetual existence.

It is important to reiterate that, in this thesis, organisations are not considered to be living systems. The reasons for this are discussed in Part 1 of this chapter and relate to the assumption that living systems are autopoietic (Maturana & Varela, 1980). Organisations are not autopoietic and as such will not be considered to be alive. The word survival, therefore, takes on a specific meaning for this discussion and from this point forward will be viewed as the continuance of a set of interactions. These interactions may take place in either the physical space or the non-physical although their mode of production in the different spatial domains will not be the same.

The second of Kickert’s models is much closer to that under development in this thesis and is based on the idea of a network of autonomous autopoietic actors. Kickert comments that within this perspective,

"The contribution of autopoiesis is that it not only describes how a network of autonomous (autopoietic) systems behave, but also how it is able to maintain its organization, its identity”(Kickert, 1993pp275)

In discussing these models, Kickert points out that relative to other conventional discussions of the topic, the relationship between the system and its environment is reversed when an autopoietic perspective is assumed. This is due to the self-referential nature of autopoietic systems, where the system selects which perturbations from the environment may act as triggers for change rather than reacting directly to those perturbations. Kickert’s models, although based directly upon autopoietic theory also fail to deal with the different modes of production described in this chapter.

In order to remain consistent with the developed “frame” it will be necessary, to develop an understanding of organisational survival that recognizes both the continuance of interactions in the physical space and changes to the structure of the organisation in the non-physical domain as distinct processes. These processes, due to their specific modes of production, will obviously not be the same, nor will they need to occur at the same time.
The states of the organisation, in the different spatial domains may also be opposed, for example, although an organisation’s survival may have ended in the physical domain, it may continue in the non-physical indefinitely. An example of this scenario was the discovery of two Japanese fighter pilots, who had survived on a Pacific island for five years after the conclusion of the Second World War. Due to their isolation the pilots continued to believe the world was at war and on discovery took several hours to be convinced that the war had ended. Although the notion of a war is obviously different to that of an organisation, the mode by which it is produced through the internal correlations of the nervous system is the same. As such, the example above illustrates the distinction between the existence of social phenomena in the physical and non-physical domains.

Healthy or Unhealthy Organisations

Generally the work of theorists who discuss the application of autopoietic theory to the social domain discuss the topic in terms of absolute states, i.e. autopoietic or not autopoietic. Partly this is due to their assumption that organisations may be viewed as living systems and therefore they are either living (autopoietic) or non-living (arguably not autopoietic). This leaves a situation that doesn’t account for the varying degrees of ‘health’, for want of a more appropriate term, that autopoietic systems arguably exhibit.

To stay consistent with Maturana and Varela’s original work, the notion of health would represent a description by the observer, in language, relating the level of congruence between the autopoietic system and its environment. In the context of this thesis, the environment would be the organisation in which the individual (system) participates. As such the notion of health is a structure-determined value statement on the part of the observer and therefore does not represent a literal state of the system.

The ‘health’ of an organisation, then, will be viewed as an observation regarding the potential for the sets of interlocking behaviours or relations, described as an organisation, to continue as a distinguishable entity in an environment. It is important to continue to distinguish between the organisation, as a set of behaviours in the physical domain, and an organisation as a set of descriptions of those behaviours in the non-physical domain. In the physical domain it is possible to apply autopoietic theory as a means to describing the processes through which the interactions are continued, however, in the non-physical domain it is necessary to take a different position on the issue.
Within Maturana and Varela's original theory, a great deal of attention is paid to the relationship that develops between the autopoietic system and its environment. The notions of structural coupling and ontogenetic drift describe different aspects of this relationship. In the physical domain, the state of the organisation is influenced by both the interactions of human autopoietic systems and, through their coupling with the physical environment, other physical perturbations, i.e. climatic conditions. In the non-physical environment these processes also occur with the difference that the notions of ontogeny, structural coupling and health may be perceived between the organisation as a whole and other non-physical entities, i.e. the economy, political system and markets.

In management literature generally, the topic of organisational survival is only discussed in terms of one domain of interaction at a time. By this I mean that the authors focus on either the physical domain and the adaptations that should take place there if the organisation is to continue, or they focus on the non-physical domain and the adaptive behaviours required of the organisation in this context. Although for most of the discussion so far these two domains have been kept separate in order to explain the "frame" under development, it can be argued that the most successful efforts for organisational survival are those that involve conscious adaptation of organisational processes in both domains. As such the physical and non-physical domains should be viewed as a whole system of interaction, with each domain influencing the other in an 'organisationally closed' manner (Varela, 1979).

**Summary**

The application of autopoietic theory to social systems and in particular organisations provides a large range of potential research questions and explanatory avenues. It also involves a highly idiosyncratic language and obscure epistemology. In this chapter I have reviewed the work of a range of authors on the topic in order to provide a rich picture of the work already undertaken in this area.

What emerged from the above exercise, were reviews of 3 streams of research with regard to the application of autopoietic theory to social systems. These streams were termed, respectively, the Sociological, Scientific and Metaphoric, reflecting particular assumptions that supported each approach. The work of Peter Hejl, was then examined in more detail. As emphasized, Hejl's work assumes a constructivist epistemology, whilst basing the processes of social and cultural change on the organisationally-closed relationships described within autopoietic theory. Unlike the work of the authors in the first three streams, Hejl's work moves between the levels of biology, social
system and society, describing the mutually triggering influence of these different levels upon each other.

A review of Hejil’s work provided the basis for the development of a ‘working’ “frame” through which to discuss organisational phenomena. Following the discussion of the companies in Appendix 1 and a summation of the underlying characteristics of those companies in Chapter 2. The purpose of this chapter was to examine 3 key questions;

1. What is the nature of an organisation?
2. What is the nature of an organisational environment?
3. How does an organisation interact with its environment?

Based on the discussions in this chapter;

1. The notion of an organisation may be considered, from this point forward in the thesis, as an embodied aspect of an individual’s worldview, both influencing and being influenced by the continuous functioning of internal correlations within the individual’s nervous system. It is produced through the individual’s ongoing interactions in both the physical and non-physical domains of the individual’s environment, although remains, itself, non-physical in nature. In order to signify this position throughout the remainder of the thesis, the word organisation will appear in italics so that the reader is aware that when I refer to an organisation, I am referring to the above conceptualization. If not in italics the reader should assume the more general uses of the term.

2. The environment of an organisation is composed by two domains, the physical and non-physical. The non-physical domain is an embodied element of the individual’s worldview and as such operates in the same way as an organisation. The physical domain of the individual’s environment is composed by physical elements external to the structure of the individual. Given the structure-determined nature of the individual’s nervous system, the individual does not have direct access to the nature of these physical elements. The non-physical environment is constructed as a function of the ongoing interactions of the individual with the physical environment.

3. Consequently the way in which the organisation interacts with its environment is dependent on the way in which the individual conceptualizes it. Therefore if the individual conceptualizes that the environment of the organisation is stable and cannot be effected by changes in organisational practices, it is unlikely that attempts will be made to consciously change the environment of the organisation. The reverse is also true. What is significant, however, is that
the organisations where interviews were conducted consciously enacted their environments in an ongoing way. As such they undertook efforts to create the structure of the environment in which they operated.

Examples of environmental reconceptualization include the way in which Ford and Kent Brewery changed the industrial relations environments in which they were operating to allow for more flexibility and fewer dichotomies in work processes.

The way in which the organisation's environment is conceptualized would appear to also be effected by the physical and non-physical environments of the individual. Considerable change also occurred to the way in which individuals interacted in the physical domain, in the companies that were interviewed. These changes included the implementation of new technology, changes to the workspace itself through the removal of physical barriers to communication and the restructuring of the work organisation to teams. In particular the movement to teams changed the way in which people interacted with each other and therefore the ways in which their worldviews changed over time with reference to the organisation.

These points provide a working hypothesis for the way in which an organisation will be conceptualized for the remainder of the thesis. These conceptualizations will now be tested through a one-year case study on Lend Lease Corporation. As noted in Chapter 2, at the time of the interviews in 1996, Lend Lease had identified knowledge management as an issue that would need to be addressed as a function of the globalisation of the company. In the following chapter, I will examine in detail the literature on knowledge management. This review will have a dual purpose.

1. To introduce the reader to the current ideas underpinning knowledge management before discussing the organisational context in Chapter 5
2. To gain an understanding of how the “frame” discussed in this chapter may be applied to the current thinking on knowledge management.
Chapter 4

Towards an Autopoietic Perspective on Knowledge

In this chapter I will review a range of literature relating to knowledge but more specifically discussions of knowledge within organisational contexts. Following an examination of issues that some Australian companies have experienced in Chapters 1 and 2, the notion of knowledge management is the focus for the remainder of this thesis. Knowledge management will be viewed as an issue within the broader pursuit of the 'learning organisation'.

The focus in this chapter will be on the work of organisational theorists and the philosophers who underpin their writing. It should be noted, however, that there is a vastly wider range of work on knowledge that could also be included. The work in the Eastern philosophies regarding the nature of knowledge and wholeness will not be discussed here, nor will the extensive discussions on the nature of scientific knowledge (Oliver-Martin, 1957). Considerable research has also been done within the various areas of educational theory regarding disciplinary (Alexander & Judy, 1988, Alexander, 1992), professional and propositional (Higgs & Titchen, 1997) forms of knowledge.

Due to the nature of the context under examination, the review in this chapter will be limited to theorists who have in some way examined or discussed knowledge within organisational contexts. To this end the work of Michel Polanyi will be discussed in some detail as, to a greater or lesser degree, most management and organisational theorists who comment on the topic of knowledge management base their observations on his framework.

Part 1 - Towards a Concept of Knowledge

In order to undertake an analysis of knowledge management within an organisation such as Lend Lease, there are several issues that must be dealt with before practical solutions may be considered. Primary amongst these issues is the identification of how knowledge may be conceptualized. In addressing this issue it should be made clear that the subject is being viewed from a Western cultural perspective, and therefore some of the conclusions with regard to various concepts may be seen as limited from other cultural perspectives. A critical issue is that knowledge is difficult to clearly define, it is a word that in common usage has several different meanings and has therefore
become a difficult focus for study. A brief examination of the etymology\(^9\) of knowledge produced the following explanation;

"This word has had a vigorous life" (Oxford English Dictionary, 1989)

The ambiguity associated with knowledge is further exacerbated in the organisational context, due to the already well-established notion of information. On the subject of knowledge management many authors such as Walsh & Ungson (1991), Allee (1997), Davenport (1997a, 1997b, 1996) use the words knowledge and information interchangeably, implying that they mean the same thing. It should be noted, however, that Davenport has gone someway to addressing this issue in a more recent publication (Davenport & Prusak, 1998). This creates considerable confusion if one is to develop and implement a knowledge management strategy in an organisation and it could be argued devalues the meaning of the term ‘knowledge management’. The reason for this is that the mode by which knowledge is retained, shared, identified, located, accessed and used, changes dramatically according to how the notion is defined. It is therefore necessary in this chapter to spend considerable time analysing the notion of knowledge, developing a clear definition of what it means within this thesis, and identifying the forms it and other closely associated notions, such as information, may take.

Within organisational research, there would appear to be 3 main streams of study relating to knowledge and its management (Sveiby, 1996a, von Krogh & Roos, 1996). The first of these streams conceives of knowledge as an object. This stream is often associated with information science and information markets. von Krogh and Roos, (1996) refer to this stream as the Information Processing epistemology. The key focus of this research is the codification of knowledge into units of information that can be easily moved, sold or attributed value in some form. The work of Dertouzos (1997) is an example of the first research stream. Dertouzos suggests that knowledge is

"...any use of information that helps the organisation." (Dertouzos, 1997pp208)

Dertouzos is particularly suspicious of knowledge and those who claim some understanding of its workings.

"...knowledge carries a belief that something loftier and much more valuable than the information itself is at play, that if captured, will place the organisation on top of its competitors! What hype.

\(^9\) Etymology refers to the history of development of a word, including its different linguistic influences, changes to its meaning over time.
In a practical sense, for most organisations there is no difference [between knowledge and information]." (Dertouzos, 1997pp208)

It should be noted that not all commentators on this field are quite so flippant and that extensive work on areas such as the management of intellectual capital and intangible assets (Sveiby 1997, Stewart,1997, Brooking, 1996, Edvinsson & Sullivan, 1996, and Quinn et al, 1996a,1996b) is providing a firm basis for further research within this stream.

The second stream of research views knowledge more as a process and is concerned with the behavioural aspects of organisational life and their effect on the retention and transfer of knowledge throughout the organisation. von Krogh and Roos, (1996) refer to this as the ‘Network Epistemology’. Initiatives in this stream usually relate to the different ways of connecting people around the organisation, again information systems often play a central role as supposedly the most cost effective means by which this can be achieved. The use of information systems has drawn some criticism from information professionals (Reimus, 1997, Strassman, 1996, Battles et al, 1996), however, with the recognition that there is more to the management of knowledge than the movement of information.

"The challenge for information systems is to facilitate organisational communication, sometimes translating one groups jargon into terms that are meaningful to others. The information systems profession will only be successful in this endeavour to the extent that it builds systems based on a fundamental appreciation for the meaning of business language" (McDavid, 1996pp128)

A third stream, identified by von Krogh and Roos, and termed by them as the Self-referential epistemology is markedly different from the two above and assumes that knowledge is a

"...private, history dependent process in each one of us. What knowledge is for you is only raw data for everybody else. Thus, you have always organisational knowledge with somebody, and the means to this is language." (von Krogh & Roos, 1996,pp334)

It is this later stream of research that will become the focus for this thesis, primarily because the above authors have based their work on autopoietic theory and as such their work carries strong resonances with the research appearing in this thesis.

The first 2 streams of research, knowledge as an object and knowledge as a process, can also be viewed from two perspectives:

- that of the individual, and
that of the *organisation*.

In the first perspective, the assumption is that knowledge is a quality only of people. The second perspective assumes there is value in studying knowledge as an emergent property of the *organisation*, i.e. *organisational knowledge*. In identifying this extra dimension to the research, the problem of moving the focus of study between different system levels is once again raised. In order to remain consistent with the “frame” developed in Chapter 3, it is therefore necessary to discuss knowledge in terms of three distinctly different levels.

The three levels and the research streams that may be attached to them are depicted in Figure 4.1 below. Each level has its own associated focus of study. In Level 1 the focus is on the individual. In Level 2 the focus is sociological and on the organisation. A third level may be perceived between those already described. This third level is consistent with an autopoietic perspective and focuses on the interactions between individuals. Each focus provides certain insights regarding the way in which knowledge may be studied in organisations. It will be argued, however, that together they do not provide a particularly coherent framework for the analysis of the topic.

![Figure 4.1 Streams of Knowledge Research](image-url)
The relationship between these different system levels and their associated research streams will now be discussed in more detail.

Part 2 – Streams of Knowledge Research

Level 1 (The Individual) The work of Michel Polanyi.

Perhaps the most celebrated thinker on the notion of knowledge is Michel Polanyi. Polanyi, originally a medical doctor, turned to philosophy relatively late in life, writing two major works on the topic. The most detailed of these was *Personal Knowledge: Towards a Post-Critical Philosophy*, which was released in 1958. The main focus of this work was to establish the basis of scientific knowledge and through this exploration develop an epistemological perspective on the problem. His second major work, is the much lighter *Tacit Dimension*, released in 1967, which is a collection of lectures given at Yale University.

Polanyi’s work has been quite influential in terms of guiding the research of more contemporary management writers. Nonaka, in various collaborative (1994, 1995) articles and a (1995) book on the topic adopts Polanyi’s tacit/explicit distinction as the basis for further theoretical developments. Sveiby (1994, 1997) also adopts this distinction in his discussions of knowledge-based assets. von Krogh & Roos (1995) suggest that Polanyi’s tacit dimension of knowledge relates closely to Varela, Thompson and Rosch’s (1992) work on embodied cognition. Each of these authors, Nonaka, Sveiby, von Krogh and Roos, focus their attention on knowledge in the organisational context, with the assumption that knowledge resides in the individual.

Polanyi's Forms of Knowledge

The most regularly cited aspect of Polanyi’s work is his distinction between tacit and explicit knowledge. It should be made clear, however, that Polanyi’s theory goes into far more depth than this dualistic analogy. Polanyi concentrates more on the complementary relationship between what he terms focal knowledge and tacit knowledge, than the explicit/tacit distinction. Focal knowledge refers to knowledge about an object or phenomenon that is in ‘focus’; an example Polanyi uses to explain this is the hammering in of a nail. In this activity it is the nail which is in the individual’s ‘focus’. Tacit knowledge refers to knowledge used to manipulate or relate to the object of the focal knowledge, using the above example, this could be holding and moving the hammer onto the nail.
Polanyi's point is that in this process the individual would not appear to be conscious of the motion of hammering, the hammering is not an object of attention. He suggests that we have a "subsidiary awareness" (1958 pp55) of the hammer. According to Polanyi, people move between focal and tacit knowledge continuously as a function of living and experiencing. As such, tacit knowledge forms a background against which all the other forms of knowledge are constituted. All knowledge therefore rests in a tacit dimension (Sveiby, 1996).

Explicit knowledge refers to that knowledge which people have made explicit through language. Examples of explicit knowledge may include things that are written down, communicated vocally, or via some other symbolic medium. For Polanyi, explicit knowledge represents the metaphoric tip of the iceberg in terms of an individual's knowledge, hence Polanyi's saying,

"We can know more than we can tell." (Polanyi, 1967 pp4)

There are several key points with regard to explicit knowledge that are significant for this discussion. The first is that explicit knowledge can be easily shared between individuals and can therefore be added to, and built upon. The second is that because it has been codified into language it can become an object for reflection by either the individual who created the knowledge or someone else. Furthermore, because explicit knowledge is codifiable into language it can be manipulated for all intents and purposes in the same way as information. The implication of this statement for organisations is that explicit knowledge can be shared to some extent through information systems, in contrast to tacit knowledge which, it will be argued, cannot be shared in this way and therefore requires a different process of management.

Tacit knowledge, as described above, remains in an incommunicable domain. This does not mean that information relating to an individual's tacit knowledge is beyond reach, rather that it is only available through the observation of non-linguistic behavioural cues. Polanyi describes the way in which tacit knowledge is transferred from one person to another in terms of his concept of tradition. For Polanyi, tradition is represented as a system of values with which the individual acts. The system is outside the individual and facilitates the movement of a process-of-knowing from one individual to another. It is perhaps more accurate to conceptualize the process as the recreation of one persons knowledge in another, rather than the transfer of knowledge from one to another. Polanyi identifies three tacit psycho-social processes by which this movement of knowledge takes place;

- Imitation
• Identification, and
• Learning by doing

Within management literature, the best known application of Polanyi’s work may be found in the work of Nonaka and Takeuchi (1995), Sveiby (1997) and to a lesser extent von Krogh & Roos (1995). The work of these researchers will now be reviewed.

Management & Knowledge

Nonaka and Takeuchi (1995), following Polanyi, have developed a theory of organisational knowledge creation. In so doing it should be noted that Nonaka and Takeuchi have already made one serious departure from Polanyi’s original theory in that they discuss organisational knowledge as well as individual knowledge. Polanyi regards knowledge as a property of the individual and not of an organisation or social system. Nonaka and Takeuchi (1995) make the comment that strictly speaking, individuals create knowledge, an organisation cannot create knowledge without individuals and that their theory is concerned more with the process by which individual knowledge is ‘ organisationally amplified’.

Nonaka and Takeuchi are quite clear regarding their particular ontological and epistemological assumptions. Ontologically they refer to levels of ‘knowledge creating entities’, i.e. individual, group, organisational and inter-organisational. This is somewhat contradictory with their original statement regarding the individual nature of knowledge. Epistemologically they are concerned with the continuum from tacit to explicit knowledge. They suggest that,

“A spiral emerges when the interaction between tacit and explicit knowledge is elevated dynamically from a lower ontological level to higher levels” (Nonaka & Takeuchi, 1995 pp57)

Through these interactions four modes of knowledge conversion are created - socialisation, externalisation, combination and internalisation. Furthermore it is through these mechanisms that knowledge gets articulated and ‘amplified’ throughout the organisation. Each mode of knowledge conversion refers to the interactions of different combinations of tacit and explicit knowledge.

Socialisation = Conversion of Tacit to Tacit
Externalisation = Conversion of Tacit to Explicit
Combination = Conversion of Explicit to Explicit
Internalisation = Conversion of Explicit to Tacit

Nonaka et al (1994) claim to have successfully tested the knowledge creation theory through a self-administered questionnaire of 105 Japanese middle managers. The results of the research were consistent with the four stage model described above, however, a further three processes relating to tacit knowledge were also identified as playing an important role in the knowledge creation process. These processes were considered as sub-constructs within the four major constructs already identified. The validity of Nonaka’s research methodology, could form the focus for considerable critique for a number of reasons. The researchers themselves point out most of these reasons. Firstly, there are limitations relating to the size of the sample and the heterogeneous nature of the sample, in that each respondent represented a different company. Secondly, there were limitations in terms of the generalisability of the findings.

"...given that all the data were collected in Japan, generalisability of these findings to other cultures remains questionable, at best." (Nonaka et al, 1994, pp350)

This is a significant point as a considerable amount of research done on joint-ventures and alliances (Leonard-Barton, 1995) between Japanese and US firms has shown that historically the Japanese were more adept in terms of transferring knowledge, or learning from others than their American counterparts. Further research of this kind would provide interesting results if expanded to cover a range of cultures. The third shortcoming of the research described above was the lack of qualitative research to support the quantitative.

Sveiby (1997, pp37), also based on Polanyi’s work, has done considerable research on the management of intangible assets in companies. Intangible assets, as opposed to tangible ones are qualities of an organisation that do not show up on the balance sheet but none the less carry considerable value. Sveiby provides the example of firms such as Microsoft, whose share price in 1995 was ten times its book value. The argument being that investors were seeing value beyond that shown on the balance sheet. Sveiby identifies three types of intangible asset;

- Employee Competence
- External Structure, and
- Internal Structure

Employee competence refers essentially to the knowledge of the people within the organisation, it
"...involves the capacity to act in a wide variety of situations to create both tangible and intangible assets." (Sveiby, 1997pp10)

Internal structure refers to characteristics or qualities of the organisation itself and includes

"...patents, concepts, models and computer and administrative systems. These are created by the employees and are generally owned by the organisation....organisational culture or spirit is also an internal structure." (Sveiby, 1997pp10)

External structure involves environmental elements of the organisations operations and includes:

"...relationships with customers...brand names, trademarks, and the companies reputation or image" (Sveiby, 1997pp11)

The argument is that these three forms of intangible asset, combined with the value on the balance sheet provide a more accurate understanding of an organisation’s value. In terms of the first two streams of knowledge research described earlier (knowledge as an object and knowledge as a process) Sveiby’s work falls into both streams. He defines knowledge as “the capacity to act” (1997pp37), stressing that this is not an all encompassing definition, rather a practical notion for the concept. He also recognises the ambiguous nature of knowledge,

"Because the word knowledge is a notion with so many connotations it is often not practical to use it." (Sveiby, 1997 pp35)

As a result Sveiby explores the notion of competence as a more workable concept to describe the characteristics of knowledge in the organisational context. He suggests that an individual’s competence is made up of five mutually dependent elements; explicit knowledge, skill, experience, value judgements and social network. This reconceptualization of knowledge also allows more accessibility to the work done on the management of intangible assets.

The work of von Krogh & Roos (1995), also examines knowledge management from the perspective of the individual, through the use of some of Polanyi’s concepts, however, their work will be dealt with later when discussing the self-referential research stream. In the next section the work of researchers, whose focus is the second system level or organisational knowledge will be reviewed.
Level 2 (Organisational Knowledge)

Blackler’s 5 Images of Knowledge

A very different perspective on knowledge in organisations can be seen in the work of Frank Blackler (1995). Blackler undertakes an extensive review of the literature on knowledge, somehow missing the work of Polanyi, and discussing a number of other perspectives on the subject. Based on the work of Collins (1993), Blackler develops a categorisation of knowledge types, with five images of knowledge, termed embayed, embodied, encultured, embedded and encoded. A brief description of these five images follows.

Embrained Knowledge, refers most commonly to abstract knowledge in the organisation. Blacker, cites the work of Argyris and Schon (1978) as one of the best examples of this form of knowledge. Their theory of “double-loop learning encourages an explicit recognition and reworking of taken for granted objectives” (Blackler, 1995pp1023). In a sense he may be referring to the ability to critically reflect. Embodied Knowledge, is action oriented and only partly explicit. This particular form of knowledge is probably the closest of those described by Blackler to Polanyi’s tacit knowledge. He actually uses the terms tacit and explicit throughout his descriptions, however, the meanings he associates with these terms are not made clear.

Encultured Knowledge, refers to the process of achieving shared understandings. This is a particularly interesting categorisation, as Blackler has essentially transformed the notion of culture into an individualised process of socialisation. He supports his argument with the work of Swidler (1986) by saying that

“...in periods of social transformation explicitly formulated ideologies become the main vehicle for promoting new recipes for action” (Blackler, 1995pp1024)

This is significant because it relates together the concepts of language, culture and action into one process of knowing.

Embedded Knowledge, is knowledge that resides in systemic routines. As such this categorisation is describing a form of organisational knowledge, as opposed to individual knowledge. Blackler cites
the work of Prahalad and Hamel (1990) on organisational competencies or core competence as an example.

Encoded Knowledge, is information conveyed by signs and symbols. This last categorisation refers almost exclusively to explicit knowledge. In this Blackler includes such things as books, manuals and electronic communications. It is important to emphasize that the information included in this category generally assumes some form of consensual domain, and it is for this reason that it will be identified with explicit knowledge. Blackler doesn’t comment on whether information is meaningful or meaningless, choosing to give examples that constitute encoded knowledge in everyday organisational life. In all the examples he gives, there is an implicit assumption that the transfer of meaning occurs because of some consensus regarding what the symbols in the communication mean.

Although Blackler’s approach to knowledge would appear to fall into the typological trap as described by Tsoukas (1996), he goes on to analyse the concept in more detail reaching essentially a very similar conclusion to Nonaka and Takeuchi, Sveiby, and Polanyi.

"First, rather than talking of knowledge, with its connotations of abstraction, progress, permanency and mentalism, it is more helpful to talk about the process of knowing. Second, to avoid segregating the forms of knowing identified in this paper, old concepts (such as the split between the abstract and specific, individuals and communities, and the social and the technical) need to be abandoned and new approaches to conceptualising the multi-dimensional processes of knowing and doing need to be created" (Blackler, 1995pp1035)

Given the review thus far, the first two streams of knowledge management research as identified by von Krogh & Roos (1996a), and Sveiby (1996a) can be viewed in terms of four research foci. There are essentially two distinct dimensions that have been discussed. The first is epistemological in nature and refers to the first two streams of knowledge research: knowledge as an object and knowledge as a process.

The second dimension is ontological in nature, with knowledge as a quality of the individual at one extreme and knowledge as a characteristic of the organisation at the other. It is possible to overlay these two dimensions and consequently produce a four focus model for the examination of knowledge management at the two systems levels described so far.
The four perspectives produced by the model, shown in figure 4.1 below, have corresponding research foci, that I have termed: Information Processing, Patents/Intellectual Property, Innovation and Collaboration, and Emergent Capabilities.

![Knowledge Management Perspectives Diagram]

**Figure 4.2. Knowledge Management Perspectives**

**Information Processing**: this perspective results from the assumption that knowledge is a characteristic of the individual and is best conceptualized as an object. The focus of this quadrant is the development of information technology solutions. In particular the codification of knowledge into database formats that can then be accessed electronically.

**Individual Performance & Innovation**: results from the intersection of viewing knowledge as a quality of the individual, and the second research stream of knowledge as a process. The focus here is on increasing the individual performance of the employee through providing a work environment conducive to knowledge management. This is perhaps the most complex of the four research foci and includes organisational structure, industrial relations and information technology issues within it.
Patents and Intellectual Property: This perspective results from the intersection of the first research stream, knowledge as an object and viewing knowledge as a quality of the organisation overall. As a consequence intellectual property and patents are viewed as belonging to the organisations as an entity and having a measurable value in the sense that they may be sold.

Emergent Capability: This view adopts the position that knowledge is a quality of the organisation and, consistent with the second research stream, is best viewed as a process. The focus of this perspective is the competitive advantage that an organisation may have, with the assumption that the whole has capabilities not found in the parts.

Each of the four perspectives shown in the diagram above, provides a focus for further study or a way of thinking about knowledge in organisations. The authors, whose work has been reviewed above, have tended to make sense of the issue through one or two of the four ‘windows’ described. The problem with such a framework, however, is the inconsistency of these different approaches when placed together. In essence this is the same difficulty as already discussed with reference to the learning organisation literature in the introduction to this thesis.

One of the greatest incoherences that needs to be dealt with is the confusion relating to the difference between knowledge and information. It will be argued that there are clear differences between these two concepts and that by moving away from an interchangeable knowledge/information framework it is possible to develop a coherent approach to the issue that can be usefully applied in the business context.
Part 3 - Knowledge, Meaning & Information

It is necessary in this section to examine in more detail, differences between knowledge, meaning and information. As described elsewhere in this chapter, there is an assumption in the work of many management theorists with regard to these notions that the concepts are interchangeable and consequently the implications that arise from the way in which the terms are defined is ignored. It is argued here that there are distinct differences between these notions, which need to be observed, if a coherent model of knowledge management is to be developed.

In examining these differences, it should be noted that the object is not to develop a typology of ‘knowledges’, rather to explicate in more detail the processes involved. As Tsoukas observes,

“Typologies are based on the assumption that an observer is able to discern certain systematic similarities and differences (i.e. forms) between the objects of study. That is fine, provided we are also aware of what we lose by doing so: for formistic thinking to be possible, the conceptual categories along which the phenomenon are classified must be assumed to be discrete separate and stable. The problem is that they hardly ever are (Pepper, 1942).” (Tsoukas, 1996 pp14)

Within the notions of knowledge, information and meaning, Tsoukas’ caution is valid. The unstable nature of knowledge is confirmed by Polanyi (1967) himself when he points out that tacit knowledge can be expressed linguistically if we focus our attention on it. As such tacit knowledge, under certain circumstances, can have characteristics normally associated with explicit knowledge. Explicit knowledge, on the other hand is always composed by a tacit dimension. Consequently the question may be asked: is there any point in making the distinction between these two forms of knowledge at all?

Of the management theorists cited thus far, Nonaka and Takeuchi (1995) discuss the distinction between knowledge, meaning and information in the most detail. They are quite explicit regarding their assumptions on the difference between knowledge and information, acknowledging the fact that many writers use the terms knowledge and information interchangeably. In so doing they make three observations with regard to the difference between these notions;

"1. Knowledge, unlike information, is about beliefs and commitment...it is a function of a particular stance, perspective, or intention.
2. Knowledge, unlike information, is about action. It is always knowledge ‘to some end’.
3. Knowledge, like information, is about meaning. It is context specific and relational.” (Nonaka & Takeuchi, 1995 pp58)

The first observation, assuming that they are referring to tacit knowledge, is consistent with Polanyi’s original conceptualization and points out the valueless (in terms of beliefs) nature of information. The second observation with regard to knowledge being ‘about action’ is significant and will be discussed in Part 4 of this chapter when reviewing Maturana and Varela’s perspective on the subject. The significance of this observation is that it implies a more embodied concept of knowledge, relating it to the process of living. The third observation Nonaka and Takeuchi make, that information and knowledge both involve meaning, is problematic, for reasons of conceptual coherence.

Following Shannon and Weaver’s (1959) theory of communication, meaning is created by the individual receiving the information and is not a quality of the information itself. Nonaka and Takeuchi (1995), however, recognise two dimensions in their conceptualization of information. The first is the ‘syntactic’ or volume of, as described by Shannon and Weaver (1959) and the second is the ‘semantic’, or meaning of the information. Nonaka and Takeuchi argue that the semantic dimension of information is very important to the process of knowledge creation due to its focus on the conveyance of meaning. They suggest that to limit the notion of information to the quantitative,

“...will lead to a disproportionate emphasis on the role of information processing, which is insensitive to the creation of new meaning out of the chaotic, equivocal sea of information.” (Nonaka & Takeuchi, 1995 pp58)

They go on to say that,

“...information is a flow of messages and that knowledge is created by that very flow of information, anchored in the beliefs and commitment of the holder.” (Nonaka & Takeuchi, 1995 pp58)

These points are based on Nonaka’s (1988) earlier work where he suggests that

“...semantic information examines the actual meaning of the information. Although actual measurement is perhaps difficult, it is a qualitative type of information that somehow changes our perceptions and actions. Therefore, creating information....is synonymous with creating meaning. Creating meaning, in turn, is creating a new perspective or a new point of view, namely a new dimension for organising and interpreting information.” (Nonaka, 1988 pp60)
Viewed from an autopoietic perspective, there are difficulties with this particular conceptualization of information and meaning. Notions such as useful, timely or meaningful are not innate characteristics of the information itself but rather observations that the practitioner makes about the information. These observations are a function of the practitioner or observer’s own particular cognitive structure and its relationship with the environment.

"The conventional view is that information is somehow lying out there to be picked up by the brain. However, such a piece of information is a quantity, name or short statement that we have abstracted from a whole network of relationships, a context, in which it is embedded and which gives it meaning…we can abstract from the context, associate it with the meaning inherent in that context and call it information. We are so used to these abstractions that we tend to believe that meaning resides in the information rather than in the context from which it has been abstracted."
(Capra,1997,pp265)

The notion of context will be discussed in more detail in Part 4 of this chapter. What is significant at this point, is that information, rather than giving meaning, facilitates an ordering effect on knowledge. A point on which Nonaka agrees.

"…the essence of creating order is in the creation of information. Once order formation is conceptualized in terms of information, it becomes closely relevant to managing organisational transformation.”(Nonaka,1988,pp59)

This position is further supported by a brief examination of the etymology of information. The etymology of information at no time atones the concept with the quality of meaning. It is derived from the Latin informare which translated means ‘To give form to’, and as Sveiby (1996b) observes, carries the connotation of imposing structure upon an indeterminate mass. The Oxford dictionary provides seven different usages for the word information, of which three relate to knowledge.

1. The action of informing; formation or molding of the mind or character, training, instruction, teaching; communication of instructive knowledge.
2. The action of informing; communication of the knowledge or ‘news’ of some fact or occurrence; the action of telling or being told of something.
3. Knowledge communicated concerning some particular fact, subject or event; that of which one is apprised or told; intelligence, news” (The Oxford Dictionary,1995pp944)
A problematic dimension of these definitions, however, is that information refers both to the communication of facts and the facts themselves. This creates more confusion, particularly if one is to consider the notions of tacit and explicit knowledge as integral elements of a knowledge management framework. Nonaka and Takeuchi claim that

“...the key to knowledge creation lies in the mobilisation and conversion of tacit knowledge [into explicit knowledge and visa versa].” (Nonaka & Takeuchi, 1995pp56)

Tsoukas, (1996) critiques this point by arguing that tacit and explicit knowledge are mutually constituted and therefore cannot be viewed as separate forms of knowledge. Tsoukas goes on to say that

“Tacit knowledge is the necessary component of all knowledge; it is not made up of discreet beans which may be ground, lost or reconstituted......to split tacit from explicit is to miss the point-the two are inseparably related” (Tsoukas,1996.pp14)

Nonaka and Takeuchi make the point that tacit and explicit knowledge are not totally separate but mutually complementary entities. This said, the framework that they develop treats these notions in a more dualistic fashion. Rather than detract from Nonaka and Takeuchi’s work, however, it can be argued that these issues serve to highlight the explanatory limitations of Polanyi’s original theory. Tsoukas’ (1996) already noted arguments against a typological approach to the notion of knowledge are again relevant in this regard.

The knowledge framework that emerges becomes extremely confusing as explicit knowledge would appear to have very similar qualities to information in that it can be codified in language and can be transferred in basically the same way from one individual to another. Yet information, from an autopoietic perspective, does not have the quality of meaning; the individual gives it meaning through their knowledge. It is not clear whether it is their explicit knowledge or their tacit knowledge that produces this outcome, nor whether explicit knowledge is meaningful in itself. As noted earlier, the relationship between tacit, focal and explicit knowledge is not stable (Polanyi, 1967), with one becoming the other under certain circumstances.

The notions of tacit knowledge, explicit knowledge, meaning and information, as described in the work of Polanyi, Nonaka and Takeuchi, therefore, do not provide a stable basis upon which to develop a knowledge management framework – unless one is to endure a number of inconsistencies
and incoherences. The above model is also limited due to its inability to provide explanations that are useful at the different system levels.

In the next section, further elements from Maturana and Varela’s autopoietic theory will be presented in order to examine the topic from an autopoietic perspective. It will be argued that the notions of information, meaning, tacit and explicit knowledge can be applied usefully when interpreted through an autopoietic framework.
Part 4 – Towards an Autopoietic Perspective on Knowledge

In this section knowledge will be examined from an autopoietic perspective. In doing this the third stream of knowledge management research, termed the self-referential epistemology (von Krogh & Roos, 1996) will be reviewed.

Maturana and Varela describe knowledge or the process-of-knowing in a number of different ways. The recognition that the way in which individuals know is intimately connected with the structure-determined way that they experience, leads to the following description of knowledge,

“This circularity, this connection between action and experience, this inseparability between a particular way of being and how the world appears to us, tells us that every act of knowing brings forth a world ... [as such]...all doing is knowing, and all knowing is doing.” (Maturana & Varela, 1992 pp26)

This particular epistemological stance, is referred to, by the authors, as objectivity-in-parentheses. It is important to note that the process-of-knowing for Maturana and Varela brings forth ‘a’ world not ‘the’ world. Reality is an embodied notion that cannot be separated from the living process of the individual. Within Maturana and Varela’s conceptualization, the notions of doing, being and knowing are all bound into the single notion of knowledge and all of these notions are subject to structure-determined processes of change. This is consistent with observation made in Chapter 3 that both the formal and phenomenological dimensions of the theory are bound together.

An individual’s nervous system is structure-determined, which means that it is the nervous system that defines and limits the forms of experience that are possible for the individual. Furthermore it limits the number and form of environmental perturbations that may trigger changes to the structure. As a consequence of these relationships, there is a defined range of potential behaviours that an individual may take part in at any particular point in time. As the nervous systems structure changes, so too will the potential range of behaviours that its structural-determinancy makes possible. This is due to the plasticity of the nervous system (Maturana and Varela, 1992).

It could be said that the continuously changing range of behaviours described above is analogous to an individual’s knowledge. If this argument were to be translated into the language of Polanyi’s (1967) theory, it would be referring to both the individual’s tacit and explicit knowledge as a single
notion. In terms of defining knowledge in this thesis, Sveiby's (1997) definition of knowledge as a capacity to act, is not inconsistent with the framework under development here. As Sveiby observes

"One's capacity to act is created continuously by a process-of-knowing."
(Sveiby,1997,pp37)

The process by which the individual's capacity changes over time is linked implicitly to the ordering effects of information. Viewed from an autopoietic perspective, information is an element of the environment, that is both perturbed by, and a perturber of, the individual. It should be noted that this position is almost completely opposed to the epistemology developed in Luhmann's (1995a) work. Information is not an element of the individual's structure, but rather a product of it. An individual’s observed behaviours, it could be said, trigger structural changes that may affect the behaviours of others in some way. Behaviours, therefore, become information when observed.

The notion of meaning from the above perspective is implicitly linked to the notion of context as alluded to in Part 3. Whitaker (1996) who examines the notion of 'context' from a number of different perspectives. From an information-processing perspective Whitaker suggests that,

"... 'context' denotes background or 'meta-level' information which constrains or determines the interpretation of other data. To serve a contextualizing function, such information must be present to or known by the observer/interpreter." (Whitaker, 1997,pp399)

This perspective is limited, however, due to the way in which it defines the notion of 'context', the implication is that the notion that guides the process of interpretation of new data is itself treated as a set of ordered data. As such, the information-processing perspective falls in on itself. Interestingly, Whitaker adopts an autopoietic perspective in his search for an epistemological escape from the problem. From an autopoietic perspective, 'context' becomes the process through which the individual relates to their environment, rather than a static object. Whitaker, (1992) describes this process as 'contexture' - an interweaving of referentiality and signification. The 'context' is not a function of the environment or the individual but the continuous process of structural coupling that occurs between the two, a position supported in the work of Uribe.

"Observers know and create their environment through interactions with it. This interaction involves an explicit or implicit prediction about the environment" (Uribe,1981,pp51)
Both the physical and non-physical domain, as described in Chapter 3 are context dependent, with a change to one not necessarily resulting in a change to the other.

Accepting the above sets of relationships, the notion of context is observer dependent. Although this may appear to place autopoiesis with other contextually relative theories, it differs because of the way in which the notion of context is used. Contextual relativism generally places the notion of context outside the observer as an environmental notion, rather than as a function of the observer/environment as a unity. The implication of the autopoietic perspective is that it is not useful to consider two individuals as being in the same 'context', even though for example they may be in the same room. The room is the environment, the context is the process by which each individual relates to it. As such action also forms an integral dimension of the context.

“...the observer sees as behaviour, or conduct the changing relations and interactions of the organism with its environment, which appear to him or her to be determined by sequences of changes of state of its nervous system” (Maturana, 1978, pp. 41)

Knowledge, for Maturana and Varela, is therefore as contextually dependent as it is observer dependent.

**Knowledge Sharing**

Context is also important when considering how knowledge is shared. It will be argued in this thesis that the idea of knowledge sharing is implicitly connected with Maturana and Varela’s notion of a consensual domain.

“...the domain of interactions specified through.....ontogenic structural coupling appears as a network of sequences of mutually triggering interlocked conducts that is indistinguishable from what [would be called] a consensual domain” (Maturana, 1978, pp. 47)

In the same way that context is not determined singularly by the environment, a consensual domain is defined not by the individuals or organisms under observation, but rather the sets of interlocking conducts or observed behaviours. Interlocking behaviours occur as a result of the process of structural coupling. Over time, the ontogeny of interactions between the two or more organisms produces congruencies in the structures of those coupled organisms. These congruencies produce sets of behaviours that are mutually triggering for the structurally coupled individuals.
Consensual domains (or the sets of interlocking behaviours) operate essentially as closed systems i.e. they are self-organising. At the same time the consensual domain is open in terms of the organisms, which produce the behaviour, therefore others can replace the component organisms so long as their structure is congruent with that of the already coupled organisms. One example of a consensual domain is language. It should be noted, however, that language is not necessary for a consensual domain to exist; it is simply one example of an interlocking behaviour. It should also be noted that a consensual domain, as the term is being used here, does not denote a domain of consensus or agreement. It refers to a set of interlocking behaviours emerging from the process of structural coupling, such a set of behaviours could be described as coordinated behaviour. The development of a consensual domain has the effect that the people involved in a particular activity are experiencing a congruity of context. The logical conclusion therefore is that knowledge cannot be shared or transferred in the information processing sense of moving an object. It may be more usefully conceptualized as the development of congruencies between the respective contexts of individuals.

Other management theorists have discussed similar concepts in their descriptions of organisations and the way in which people work. Weick & Roberts, (1993) discuss the notion of heedful interrelating to describe the complex sets of interlocking behaviours that operate on aircraft carriers. Weick, (1993) also discusses what happens when these relationships break down through an examination of the Mann Gulch disaster.

De Geus (1997) describes the notion of ‘flocking’ to describe how knowledge may be ‘propagated’ throughout a community. This particular metaphor is drawn from a comparison of two British bird species, the Robin and the Blue Tit. These birds have come under a considerable amount of study due to their habit of siphoning the cream from the top of milk bottles left on the doorsteps of people’s homes. The distinguishing feature between these birds is that although both species were able to innovate the new behaviour, only the Blue Tit learned it as a population.

“...the blue tits went through an extraordinarily successful institutional learning process. The robins failed, even though individual robins had been as innovative as individual blue tits. Moreover the difference could not be attributed to their ability to communicate. As songbirds, both the blue tits and the robins had the same wide range of means of communication: colour, behaviour, movement and song. The explanation....could only be found in the social propagation process: the way the blue tits spread their skill from one individual to members of the species as a whole.”(de Geus,1997pp162)
Rupert Sheldrake's (1995) theory of formative causation provided a radically alternative explanation for the successful learning of the blue tits. In short, Sheldrake proposes that

"...morphogenetic fields play a causal role in the development and maintenance of the forms of systems at all levels of complexity." (Sheldrake, 1995, pp. 74-75)

Sheldrake describes morphogenetic fields as probability structures that influence the probability of events in lower level 'morphic units' under their influence. It is beyond the scope of this thesis to describe Sheldrake's theory in any detail, however, in terms of the blue tit analogy described above the implication is as follows. Through the innovation and repetition of a particular behaviour by a few blue tits, it becomes easier for other blue tits to learn the same behaviour.

"If a motor field becomes increasingly well-established through repetition in many individuals, learning is likely to become progressively easier: there will be a strong innate disposition towards acquiring this particular pattern of behaviour"

(Sheldrake, 1995, pp. 184)

Unfortunately Sheldrake's theory doesn't account for the Robins inability to learn as a population.

Each of the examples of knowledge sharing described by Weick and Roberts (1993), de Geus (1997) and to some extent Sheldrake (1995), focus on the second level as described in Part 1 of this chapter, or organisational knowledge. This raises the same problems discussed in Chapter 3 relating to the application of autopoietic theory in the social domain. The problem is the application of a concept (in this case knowledge) in a different ontological level to that in which it was originally generated produces a number of inconsistencies. In line with the assumption that the conceptualization of knowledge developed in this thesis should be useful if it is to have any value, it should also account for organisational knowledge within its breadth.

**Organisational Knowledge**

One approach to conceptualising the notion of organisational knowledge would be to follow the work of von Krogh and Roos (1995).

"Dependent on our observational scheme, knowledge development is really knowledge development at various scales; autopoiesis at various scales. A theory of scaling may help us to understand the relations between individual and social knowledge development, the dynamics of
individual and social autopoietic systems; in fact it may help us unbracket (socialised organisational knowledge)” (von Krogh & Roos, 1995pp69)

In essence von Krogh and Roos’ argument is that autopoietic systems and their associated knowledge may be conceptualized as operating in much the same fashion as Mandelbrot’s (1977) fractal geometry. Mandelbrot’s geometry has received a broader audience due to the recent growth in popularity of Chaos Theory. Put simply, fractals describe self-similarity;

“Self-similarity is symmetry across scale. It implies recursion, pattern inside pattern” (Gleick, 1987pp103)

The venue for Mandelbrot’s exploration of fractals was mathematics, however, von Krogh and Roos (1995) argue that the same idea may be applied to the social domain.

“In fact we could probably generate ‘Mandelbrot sets’ in different social settings and for processes like industries, organisations, education, health care, and individual behaviour” (von Krogh & Roos, 1995pp81)

Such a position is initially alluring and appears consistent with everyday observations of organisational life i.e. the patterns of behaviour of the individual may be thought of as similar to those at the level of the team, and the business unit, and the corporation. This approach, however, suffers from the problems of ontology discussed in Chapter 3. The shortcomings of Robb’s (1992a) work are consistent with that of von Krogh and Roos (1995). Organisational knowledge, like the organisation itself is a distinction made by the observer regarding their non-physical environment. As illustrated in Figure 3.2 the non-physical environment exists as an internal correlation of the observers nervous system and is an embodied aspect of the observers worldview. It does not exist in the external sense that von Krogh and Roos propose. As such, the autopoietic metaphor as proposed by von Krogh and Roos lacks the internal consistency required for a workable framework. As noted in Chapter 3, it is important to separate the behaviour of individuals from the descriptions of those behaviours. By describing organisational knowledge in terms of scaled individual knowledge, von Krogh and Roos deny the observer the opportunity for distinction of the different levels described in part 1 of this chapter. This is problematic because without the observer’s distinction, these levels would not exist in the first place.
The notion of organisational knowledge, much like organisational learning\(^{10}\) is not required within
the autopoietic perspective developed in this thesis. It is possible to account for the notions of
organisational knowledge and learning by remaining consistent with the embodied model of
organisation shown in Figure 3.2.

**Summary**

Knowledge management as a process is difficult to conceptualize for a number of reasons. The
greatest challenge for an *organisation* in terms of developing the ability to more effectively manage
knowledge, is the development of a consistent and coherent framework for the constitution of the
notion. The tendency to confuse the concepts of knowledge, information and meaning makes it very
difficult to develop a workable process.

In this chapter, the characteristics of these notions have been clearly separated in order to address
this problem. This results in a conceptualization, where information carries no meaning in itself,
meaning is generated as an abstraction from the context. The context is the process by which the
individual relates to their environment (physical and non-physical). Knowledge is the embodied
process of doing, knowing and being. Simplified, it may be defined as an individual’s capacity to
act.

The idea of knowledge sharing, due to the words used, promotes a conceptualization of knowledge
as an object. This particular perspective has limitations, however, due to the information processing
focus that emerges. Given the autopoietic perspective adopted in this thesis it is more accurate to
conceptualize the process as the recreation of one’s knowledge in another individual. The process by
which this takes place requires a number of similar experiences on the part of the individuals who are
supposed to be sharing their knowledge. This allows the relational process of contexture
(Whitaker,1996) to be mutually developed by those individuals involved, over time producing a
consensual domain.

Knowledge management, given the above conceptualization, could be suggested to be impossible, in
the sense that an individual’s knowledge cannot be separated from the embodied process of their
autopoiesis. The interactions between individuals can only be encouraged at best and remain
unpredictable in nature. Information management is a less problematic issue, as it allows for the

\(^{10}\) Organisational learning is a process of learning on an organisational scale. The ‘Learning Organisation’, is viewed as
an ideal type of work organisation and not the process of learning itself.
centralisation of information within an organisation and a higher degree of control. However, knowledge management as it will be discussed in this thesis, must incorporate both the social (knowledge sharing) and technical (information management) aspects of the topic in order to provide a useful framework for further study.

Although in this chapter I have provided an overview of different theoretical approaches to knowledge management, the role of knowledge management in organisational survival has not been made clear. Following the developmental model put forward in Chapter 2, knowledge management represents a discernable step in the development of an organisation, it does not, however, represent the process of survival itself. In order to understand this process in more detail it is necessary to understand where knowledge management fits in the context of an organisation and how the organisation changes over time to manage knowledge.

In the next chapter, I provide an historical overview of Lend Lease Corporation. The purpose of the overview is to introduce the reader to the focal context for the research and provide a background to why knowledge management was of significance to this particular organisation at the time the case study was conducted.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
Chapter 5

The Context: Lend Lease Corporation

This chapter provides a general description of Lend Lease Corporation in order to provide some context to the descriptions of its responses to the knowledge management issue. The greater part of this chapter is a history of Lend Lease Corporation. Accepting the autopoietic perspective adopted throughout this thesis, it is important to understand the ontogeny of the system in order to make sense of the current structure and situation.

In understanding the ontogeny of the system, the focus for study is the relationship between the system and its environment. This focus was informed by the first phase of the research described in Chapters 1, 2 and 3 where the significance of the relationship between the organisation and its environment was noted. For this reason, key events within Lend Lease's history have been described in order to draw attention to a general trend in the way that the organisation would appear to have interacted with its environment.

The history follows the growth of the organisation up until December 1997, and includes a description of what might be described as some of the organisations intangible characteristics i.e. culture.

Part 1 - Lend Lease Corporation: Historical Overview (1951-1997)

Lend Lease Corporation had its beginnings in the early 1950's. Murphy (1984), has recounted the organisation's history in some detail and the description of the company's growth up until the early 1980s draws considerably from her work. The organisation that is known as Lend Lease Corporation had its origins in 1951 as Civil and Civic Contractors. Civil and Civic was a joint venture between two Dutch construction companies. The first contract the company undertook was the supply and erection of 200 prefabricated houses at Cooma in New South Wales, as part of the Snowy Mountains Hydro-Electric Scheme. The company's founder G.J. Dusseldorp sourced tradesmen for the job from Holland.
Throughout the nineteen fifties and sixties the organisation grew rapidly, as a function of the booming post-war Australian economy. The construction industry of the day was supported by two main factors.

- The strength of wool prices providing large injections of money into the economy, and;
- an unprecedented immigration program that was initiated following the Second World War

By the end of the 1950s, Australia's population was approximately 8.3 million people, with the majority of people living in capital cities. The influx of new people resulted in increased demand for residential housing and considerable urban expansion, particularly in Sydney. Widespread adoption of the car was also a characteristic of the period, effecting a change to the lifestyle of Australians in general. During this period of strong economic growth, Civil and Civic undertook a number of ground-breaking construction projects, which over time, led the company to be recognised as one of Australia's leading construction firms.

The first of these projects was the development of the Sydney Harbourside suburb of Castle Crag. The distinctive feature of the Castle Crag development, related to the development process itself rather than the construction aspects of the project. Whilst in negotiations to purchase and develop the land, a problem was identified in that sewerage was not available to the site. The lack of a sewerage system would of course be a deterrent to potential buyers. This problem was further compounded by a twenty year backlog of sewerage works yet to be provided in the Sydney area. The Metropolitan Water Sewerage & Drainage Board had, up to this time, been providing approximately four and a half thousand kilometers of sewer per year. However, due to the rapid growth of Sydney and the subsequent demand for new housing, the number of unsewered homes was rapidly rising.

Given this situation and the difficult terrain of the Castle Crag site, the cost of supplying a sewerage service after the development had been completed was not feasible. Dusseldorp approached the Water Board with the suggestion that Civil and Civic install the sewerage at its own cost, to the Board's specifications.

"From the company's point of view, shoudering the burden of an extra initial expense could increase the value of the land out of all proportion to the cost of creating that value." (Murphy, 1984pp14)
Dusseldorp argued, that by placing the responsibility for the provision of sewerage on developers, as a condition of land subdivision, the Water Board could concentrate its effort on major infrastructure concerns and as such reduce the 20 year gap that had developed. In time the Board accepted Civil and Civic's proposal and in February 1961 adopted a policy of requiring land developers to meet the cost of additional water and sewerage services for new subdivisions, if those services were required in advance of the development. In 1963 the Local Government and Metropolitan Water Sewerage & Drainage (Amendments) Act came into effect. Sub-dividers were required to obtain a certificate from the Board showing that sewerage was available, or soon would be, before Councils could give final approval to subdivision plans.

As a result of the Castle Crag development, one element of Civil and Civic's legislative environment had been changed, with a considerable pay off in terms of profit for the organisation and the wider community.

Under Dusseldorp's leadership the company continued to grow, by a combination of innovation and market creation. In 1957, Dusseldorp began to see limitations in the fixed-price building contract which was the norm in the Australian building industry at the time. The problem with this system was that the builder had to carry the cost of design changes and delays regardless of the cause and over which the builder had basically no control. His answer to this problem was to bring control of the money, the design and the construction all under one umbrella. The first step towards this goal was the establishment of a publicly funded finance and investment company, to fund Civil and Civic projects. By providing long term finance to customers, something for which there was strong demand, Dusseldorp could broaden the market for Civil and Civic's new design and construct product.

As a result of this idea Lend Lease Corporation was floated in April 1958. Civil and Civic held a 40% share of the new company and profits from the completion of buildings were split between the two companies based on the decision of the two company boards. The establishment of Lend Lease was received favourably by the public and opened up a wider range of possibilities for Civil & Civic's products. Amongst these new projects was the Blues Point Tower Development.

The Blues Point Tower development was another project where Civil and Civic produced a major innovation. Like the Castle Crag development, the major innovation lay in the way that the organisation manipulated the regulatory environment in order to increase its potential market. The Blues Point Tower is a 28 storey block of apartments, at McMahon's Point on Sydney Harbour. At
the time of its proposed construction, it was to be a part of a new residential area on the northern harbour foreshore. In the early 1950s, the demand for home units was rapidly growing. This was due to the competitive cost of construction, in comparison to a normal dwelling, and the access that the apartments allowed to the city.

Ownership of home units, such as those in the Blues Point Tower, came under the control of Company Titling laws. This meant that the home units were not owned in themselves, rather the home owner bought shares in a limited liability company which assured the exclusive use of a particular part of the building. This situation worked well for people who didn’t require finance or were not planning on subletting, however, for those not in this position, Company Titling had some drawbacks. Primary amongst these drawbacks was the resistance of banks and insurance companies to accept shares in these companies as collateral for the approval of loan funds. The reasons for this included:

- the lack of a certified title for the unit, the company being the freeholder; and
- the units were not freely assignable. Therefore if a borrower defaulted on their loan, a mortgagee could be stopped from selling by the company's board.

Given this situation, finance on home units could only be obtained at higher interest rates than that which applied to conventional homes. In order to open up the home unit market, it was obvious that changes had to be made to the titling laws in order to allow the individual ownership of the units. Considerable public debate took place in order to resolve the issue with the result that the difficulties of framing new legislation were too complex to overcome. There were, however, a number of people, of whom Dusseldorp was one, that felt that the difficulties were not insurmountable. After negotiations with a large number of financial, real estate and government institutions in order to gain support, the bill was brought to Parliament in 1959. After a number of revisions, and a suspension of action for one year in order to allow comments and suggestions to be received, the Conveyancing (Strata Titles) Act came into being in 1961. Blues Point Tower was the first high rise building to be registered under the Strata Titles Act, and is another example of how the organisation was able to consciously change its environment in order to improve its position.

Of course other larger projects followed, including 'Australia Square', significant because it involved one of the most complicated funding arrangements and land acquisitions of the time, it was also the tallest lightweight concrete building in the world. A period of nine years elapsed between the first public announcements of the development and its full occupation by tenants in 1969. In the same
time period Lend Lease had also spread its operations to property management and the retail sector with the establishment of Bankstown Shopping Centre, then the largest shopping centre in the country. Lend Lease was following a clear strategy of vertical integration, now offering long term and short term finance for construction projects, complete design and construct services and property/facilities management. It should be mentioned that at this time Lend Lease was undertaking projects all over Australia, and some in New Zealand.

The management of knowledge was already an issue in some ways. The need to understand another individual’s ideas was already considered a key aspect of doing business. Bob Weir, who was involved in the marketing group in the sixties was quoted as saying,

"We were selling something intangible. You went to a client who wanted something built. Nobody knew what he wanted, there was no shape to it - just something vague in his head; and you had to get the information out of his head, and the heads of other people in his organisation, work it into a need, clothe it in some way and sell it back to him." (Murphy, 1984, pp122)

The next significant project to take place, was the MLC Centre. In much the same style as Australia Square had taken place, the MLC Centre development involved many complications in terms of land acquisition, which involved the purchase of a number of adjoining properties. At the time of its completion, the MLC Centre was the tallest concrete office building in the world (240 metres) and won several awards for innovation in design and construction methods. Lend Lease's vertically integrated structure allowed it to have control over all aspects of the building process, including initial financing, design, construction, leasing and centre management.

Through the 1960s, 70s and 80s Lend Lease also made several innovations in terms of its people management. The first of these related to a superannuation scheme for both white and blue-collar workers. Although superannuation is now compulsory, in the early sixties it was an unusual element of an employee’s remuneration. Over time the range of benefits was expanded, through consultation with employees and unions, to provide a wide spectrum of employee benefits, including sickness, accident and death insurance for all employees, an extension of Workers Compensation to non-working hours and a profit share for members of the Lend Lease superannuation funds. These benefits were, for their time, radically different to the benefits offered by other companies in the building industry. These innovations are often related, within the organisation to the Dutch social-capitalist perspective of its founder.

Murphy (1984) notes that Lend Lease's strategy followed a number of established principles;
"...to keep watch on events over the horizon; to keep the organisation sufficiently flexible to react early to approaching change; to retain a long-term interest in properties developed, without long-term capital investment, and to be free of fluctuations in the property market by having the public subscribe the owning money, through creating independent property trusts, for the capital assets created and managed by Lend Lease". (Murphy, 1984pp

The late 1970s proved a difficult period for the organisation but more so for the building industry. In 1977 the Australian property market was described as being in a state of total collapse and Lend Lease was forced to write off $4 million dollars against the current years profit in overvalued properties. Even with this write-off, however, the organisation was able to show a 20% growth in profit over the previous year. 1977 was also marked by a number of changes to senior positions in the organisation. Bill Leavey, Managing Director of the group since 1965 retired and Stuart Hornery (the current Chairman of the group) was appointed as the new Managing Director. The Lend Lease Group now operated in all states of Australia, New Zealand, and Singapore. Lend Lease and Civil & Civic were also established in the USA for the first time.

In 1983, the company made a major strategic diversification into financial services with the acquisition of MLC Insurance. The two companies had held a long relationship with many of Civil and Civic’s construction projects being for the MLC. Various executives from both companies had also held positions on the boards of the MLC and Lend Lease for several years prior to the acquisition. The MLC acquisition was followed by a number of others in the late 1980s. Capita Insurance and Eagle Life were merged into Lend Lease’s financial services and by the early 1990’s Lend Lease had acquired 10% of Westpac Banking Corporation and had two seats on the board.

This diversification into the retail financial services sector was further complemented with the development of a corporate services division. This included funds management, payroll services and employee services for Australasian corporations. By 1995, Lend Lease’s diversification into the financial and corporate services areas had grown to account for approximately 60% of the group’s total revenue.

The expansion into the financial and corporate services industries also brought with it a number of cultural issues. Lend Lease’s property and construction roots had involved the development of a highly aggressive business culture based around project management. Employees were moved from one project to the next within short periods of time, subsequently requiring a high level of flexibility on the part of staff. It is a highly results driven culture; ‘if you get the results, you get the
promotion’. Results are also relatively easy to assess, as projects have a definitive beginning and end, and there is a tangible outcome i.e. a building, on time, on budget and perhaps technically superior to the products of the competition. Due to the project-based nature of the organisation, the organisational structure is also under continuous change. Formal organisational charts are rarely prepared, as a new one would be required at the end of each week. Ciborra’s (1996) notion of the Platform Organisation is very relevant to the Lend Lease context. Ciborra suggests that,

“...even if structures are in place to guide behaviour and there is an effort to revise them radically every year, everyone knows that they are only marginally relevant at the moment of action, and what really matters is the possibility one has of relying on a personal network of colleagues located in the various units of the organisation.” (Ciborra, 1996 pp108)

The complexity of the organisation dramatically increased with the diversification into the financial and corporate services industries. These industries are composed of fundamentally different demographics (the property industry being predominantly male and financial services having a greater balance of male and female employees) and very different business processes.

“The culture of the financial/corporate services staff is more analytical and emphasises the people side of management, focusing on typically longer term projects and results.” (Stace, 1997 pp123)

The MLC had a long institutional history with a correspondingly conservative culture that was difficult to reconcile with the entrepreneurial culture of the property business. The ability of Lend Lease to present a unified cultural face quickly became a key issue, particularly as it entered into a new phase of expansion - internationalisation.

Although Lend Lease operated in other parts of the world, as noted above, it primarily remained an Australian company up until the early 1990s. Headquarters for the organisation remained in Sydney, and although overseas operations were expanding, to most employees in Sydney the overseas operations were “out of sight and out of mind”. Lend Lease made some moves into the US in the early 1980s, however, these were largely unsuccessful. This perspective changed dramatically, however, with Stuart Hornery’s announcement of a major push to expand Lend Lease businesses in Asia. In essence this expansion was driven by the need to grow. Many of Lend Lease’s domestic (Australian based) businesses were operating in increasingly mature markets, particularly in the financial services area and therefore the opportunities for domestic growth were becoming more problematic (Stace, 1997).
The vision for Lend Lease had changed, and was now expressed as;

"To be the world's number one funds manager in retail and property funds, and to be the premier project management group in Asia" (Hornery, 1992)

Beyond Asia, however, this statement represented the beginning of a highly ambitious internationalisation of the organisation which would see Lend Lease operating in four regions: the US, Europe, Asia and Australia by 1996. Doug Stace's, (1997) case study on Lend Lease's international expansion will form the basis of the remainder of this historical review. The strategic repositioning of Lend Lease internationally is particularly interesting because of the diversity of approaches that have been taken and the efforts to maintain a single cultural face. Each of the regions identified above can be clearly associated with a different mode of expansion. What follows is a description of each regional expansion.

**Internationalisation**

**Asia**

Asia was the first region into which serious expansion took place. Assessment of the best way to develop Lend Lease in Asia was primarily undertaken by Dick Morath (a senior executive) and Stuart Hornery, who spent long periods in Asia in search of suitable acquisitions and partners. Due to the undeveloped nature of the region, lack of legal structure and the strong family ownership of firms, it was decided that joint venture arrangements would be the preferred commercial structure in the region (Stace, 1997). This decision naturally required an understanding of the cultural issues associated in managing joint ventures, particularly in Asian cultures. To assist in this area, a 'corporate concierge' was appointed who had worked extensively in Asia and more specifically Japan. His role was to research markets and expand awareness of Lend Lease's financial services as, due to Lend Lease's relatively established operations in Singapore, the company was primarily regarded as a property services organisation.

The concierge role also included the introduction of corporate protocols and cultural skills to executives travelling in Asia. These protocols ranged from the observation of seniority and rank at social functions, to the translation of resumes into the local languages. Although very important, the establishment of such protocols was relatively easy when compared to the task of presenting Lend Lease with a single face to potential Asian partners. Within Australia, the acquisition of MLC had not involved a change of name. In fact, changing the name of this business would probably have
resulted in a loss of market image due to its well-established name in the financial sector. Within Asia, however, these names essentially had no image and the task of explaining the complex sets of relationships that constituted Lend Lease would be prohibitive to the establishment of partnerships. As such, a senior executive committee was formed to oversee developments in Asia and through this committee the notion of a ‘one face’ approach to Asia emerged.

The first major joint venture (JV) in Asia, outside of Singapore, was the Lend Lease-Sinar Mas joint venture in Indonesia. At the time Sinar Mas, a family owned business, had an annual turnover of $3 billion US, and employed 65 thousand people. The company also had numerous joint ventures and alliances with a number of other companies around the world. Sinar Mas was chosen from a short-list of three or four potential joint venture partners. In 1993 a ‘Memorandum of Understanding’ was signed to form six JVs in the following areas,

Pension Funds Management (PT Bank International Indonesia/Lend Lease Investment Services);
Life Insurance (PT Simas, Lend Lease Life);
Project Management (PT Lend Lease Graha Indonesia);
Payroll Services
Property Funds for Institutional Investors

It should be noted that Lend Lease made it clear to its JV partners that it had a long term commitment to the relationship, as it has been observed that the Asian corporates prefer to deal with JV partners on a longer term basis. The process of using JVs as the preferred approach to Asian expansion is expected to continue.

The United States of America

International expansion into the United States was undertaken via a different process; that of acquisition. In 1994, Lend Lease acquired the Yarmouth group, a large real estate investment management organisation. At the time, the Yarmouth group managed $6.6 billion US worth of property investments in the United States and $1.2 billion, in Europe. This was followed in 1997 by the acquisition of Equitable Real Estate (ERE).

The two acquisitions were merged shortly after the purchase of ERE to form ERE Yarmouth in June 1997. The combined size of the US operations and those already held globally, arguably make Lend Lease the largest integrated property services organisation in the world. The strategy behind the
acquisition and subsequent merger of these organisations was summed up by Matthew Banks (CEO of ERE Yarmouth), in an interview for “Commercial Property News” (1997).

“In broad terms, we’re looking to be able to link our skills, knowledge and research on a global basis, to be able to provide them to our client base worldwide” (Silverman, 1997)

The merger of ERE and Yarmouth was also significant, as for the first time in its 48 year history Lend Lease employed almost as many people overseas as it did in Australia. Given this situation, the organisation is experiencing a shift from viewing itself as an Australian property company to one where the bulk of its operations are managed offshore. This point was reflected in an article by Silverman (1997).

“Ultimately, Lend Lease management; which views real estate as a local business, envisions full-service real estate operations managed from the US, but with individual operations in Asia-Pacific, Australia and Europe, sharing skills with each other so each offers full capabilities and investors from any place in the world can take part in the real-estate market anywhere worldwide.” (Silverman, 1997)

Although the ERE Yarmouth acquisition/merger accounts for the greater part of Lend Lease’s expansion into the U.S., the acquisition of Compass Management and Leasing provided an important base from which to develop its global facilities management business. Prior to its acquisition by Lend Lease, Compass had already begun to expand globally with 12% of its total business being derived from operations in the United Kingdom and South America.

The rapid expansion into the United States has brought Lend Lease much closer to becoming a global “one stop shop” for real-estate services. A senior executive of Compass was quoted as saying

“...we're integrating with Lend Lease, not only complete services but also front-end design/construction. From design to financing to operations to dispositions on a global basis...” (Silverman, 1997).

Europe

The third region of expansion was Europe and again a different approach was adopted that of a greenfields establishment. Lend Lease’s European operations initially were limited to one major development project - Bluewater. Bluewater, completed in May 1999, is the largest shopping centre
in Europe, situated on the M2, 40 minutes from the center of London. It is also en route to the Channel tunnel and therefore will also service continental shoppers.

Since the initiation of the Bluewater project, Lend Lease Europe has expanded with another office development in Madrid and several projects in Scotland and the former Eastern Block countries. Lend Lease Europe (LLE), as it is termed within the organisation, differs from the Australasian and US operations due to a different operating structure. LLE is based upon a matrix structure where the different functions or service offerings are integrated into a large business unit. Multi-function teams form around business opportunities and manage the projects. Up until the end of 1997, LLE was involved almost exclusively in retail property projects with no real expansion into other market segments.

Lend Lease’s other operations are characterised by a flat structure divided into 4 or 5 divisions, often termed silos by the people within the organisation. At the beginning of the case study, these silos had very limited interaction as a part of everyday business and operated for all intents and purposes as independent entities, reporting back to a holding organisation.

Taking market, legal, cultural and economic considerations into account, Lend Lease was required to adopt different strategies for each region and as a function of this process, created different organisational structures to suit.

Summary

Below is an attempt to graphically represent Lend Lease’s organisational structure during 1997. This diagram should be viewed as providing a general picture of the overall complexity of the company, but not a concrete view of its structure.
Figure 5.1 Lend Lease Corporate Structure

From the above description it can be seen that the complexity of Lend Lease's structural and cultural diversity has experienced a dramatic increase on two occasions. The first increase in complexity occurred through the acquisition of the MLC in 1983 and the rapid expansion into financial and corporate services, the second increase occurring as a function of the international expansion described above. Lend Lease is now moving into a new stage as the attempt is made to globalise, as opposed to internationalise, its operations.
Part 2 – Qualitative Overview
Work Place Reform

During the period of organisational expansion described above, a number of other changes also took place within the organisation. The change of most relevance to this thesis, relates to Lend Lease’s response to the Government’s Work Reform Agenda. At an ideological level this resulted in an explicit statement of intent in the 1991 Annual Report;

“...we intend to embrace what is now termed in Australia ‘Work Place Reform’...An integral part of the change process involves the transformation of Lend Lease into a learning organisation”(Horney, 1991)

The reform process which followed and the resulting industrial relations, and workplace practices were amongst the most successful of any Australian company at the time. As described in the first chapter of this thesis, both Civil and Civic and MLC underwent the process of Enterprise Development Agreements in similar fashion to ICI Botany and CUB’s Kent Brewery. In each case Professor Bill Ford had considerable involvement and had been a part-time employee of Lend Lease for six years at the beginning of the case study.

The reform process was limited to Lend Lease’s Australian operations and was consequently linked to the industrial, cultural and legislative environments of Australia. It is important to note that the reform process which took place in Lend Lease, occurred concurrently with the expansion into Asia and preceded the major expansions into the United States. The result is that the numerous businesses that constitute the Lend Lease group of companies world-wide, can all be placed in different phases of the developmental model shown in Figure 2.2 (Chapter 2).

Due to the different stages of development that the various businesses of Lend Lease are in, the businesses have different interests in terms of the application of resources, sharing of ideas and general commitment, when it comes to undertaking strategic change processes. As noted in the interview results in Appendix 1,

“The process of getting ‘buy in’...I guess getting core businesses lined up is sometimes difficult. I mean if a chief executive says jump – no one will say how high. It’s just not the culture in Lend Lease. It’s got to be mutually beneficial so leadership comes in a slightly different form. If you want to do something here, you’ve got go around and convince people of the benefits to their business.”(LLC1, 11/12/1996)
For this reason knowledge management represents a larger issue to some parts of the business than others.

The Lend Lease Culture

Both within Lend Lease and to outside observers of the company, the Lend Lease culture constitutes somewhat of an enigma. It is seen as the organisation's competitive advantage in the marketplace, yet few people were able to describe it. It became evident through the case study interviews, however, that the different business units had clearly different cultures. Most people identified the rapid expansion of the organisation as the cause for the dispersion of the culture.

One project manager suggested that

"...in the old days, when the company was smaller, the culture was held by a sort of informal boys club. You gained the culture through osmosis — if you didn’t get it then it was something that was wrong with you. Now that the company has grown, the old boys are disappearing and the company is trying to recreate the osmotic channels of enculturation — but it doesn’t work" (LL2, 12/5/1997)

As noted, the organisation has experienced two major increases in complexity, the first from the expansion into financial and corporate services, and the second from the addition of overseas operations. To some degree the cultural effect of expanding into financial services has already been described, however, it should be noted that the culture of the MLC, at the time of acquisition, had been built up over more than 80 years, it was conservative and institutional. In marked contrast, the culture in the property services division was far less formal, with project management as the central characteristic. As also noted above, the demographics of the two organisations were very different. Civil and Civic was and still is engineering-based and male dominated.

The perception was that the property and financial services divisions were two different companies with two different cultures. To address this there had been continuing attempts to bring the two organisations ideologically closer, this had been facilitated through moving people across divisions and a range of courses conducted by Lend Lease Learning. Despite these attempts, however, the

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11 Lend Lease Learning was the equivalent of the training and education department in other companies. Its role was more all encompassing, however, in that one of its charters was to facilitate the continuation and growth of the Lend Lease culture in the context of the rapid organisational changes. Lend Lease Learning was closed down in late 1997 with many of its functions being picked up by a newly established Organisational Development Unit.
differences continued. It was a generally accepted view that it was easier for ‘Lend Lease’ people to make it in MLC than the reverse. On occasions when MLC people had come across to work in property services, they were rarely able to adapt to the new way of doing things. There was also a perception of a one way flow of ideas from Lend Lease to MLC i.e. project management ideas and practices have been taken ‘across the harbour’ (MLC is based on the North Shore of Sydney Harbor) but few of the MLC ideas have survived the return trip. An exception to this rule would be the “Process Simplification” initiatives undertaken in MLC, which have now been adopted by other group companies.

There were also perceived to be material differences between the two divisions, not necessarily in terms of remuneration but more in relation to the work environment. Some of this included petty things such as

“...they (Lend Lease) get cream biscuits and we (MLC) don’t.” (LLC3, 3/1997)

This issue appeared to be a function of the change process that had been taking place in MLC at the time of the interviews. MLC was going through process simplification, with the goal of reducing costs by 40%. As noted above, financial services accounted for approximately 60% of Lend Lease group revenues prior to the acquisition and merger of ERE Yarmouth. As such, people within financial services questioned why they should have to tighten their belts when the property services division, in particular Civil and Civic, which had operated at a loss during the building slump of the early 1990s was not placed under the same pressure.

There are a number of characteristics of the culture that can be described from experiences in the case study. The strength of these characteristics varied enormously across the group, particularly when a global perspective of the operations is adopted. The first of these characteristics is the relative openness of the organisation. The open door policy is well entrenched and as the organisation becomes more enabled in terms of information technology the possibility for communications between the different levels of the organisation’s structure is increasing. Anyone in the organisation could contact David Higgins (the current chief executive), if he was the most appropriate person to contact, and no one in Australia would question it. The same can be said of other senior executives across the organisation12.

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12 It should be noted that the majority of my time was spent within Lend Lease Learning, in Sydney. I am unable to comment directly on the openness of operations in the MLC, the US, UK and Asia, as I was not within these contexts. Comments made regarding these parts of Lend Lease are based upon conversations with employees from those regions.
The culture in the Asian operations also differed radically as a function of the national cultures of Indonesia, Malaysia, China etc. The idea of someone relatively junior in the organisation contacting the CEO, in Indonesia for example would be unthinkable. In the US, the culture is also more hierarchical and so it would be unlikely that people would approach the chief executive as freely as they do in Australia.

Corporate citizenship is another important aspect of the Lend Lease culture and an area where Lend Lease has traditionally been a leader. One example is the ACTU-Lend Lease foundation. Stuart Homery initiated the ACTU-Lend Lease foundation, in 1981, with a view to improving access to skillling and reducing the high levels of youth unemployment. A number of non-profit group-training companies were set up to coordinate the allocation and administration of apprenticeships. Over the past fifteen years, the initiative has grown to involve 140 group training companies, employing 16% of the apprentice labour in Australia.

Since the program’s inception, the focus has gradually moved to include a high level of work with aboriginals; in terms of aboriginal housing – by aboriginals. Lend Lease’s contribution to the program in terms of money is relatively small, with a number of other corporates and organisations now also contributing. Rather the contribution is in terms of people to run the program and the use of the organisation’s influence to push the project forward. The program has recently expanded to Indonesia and the UK. The emphasis on skills development included giving Lend Lease shares to the establishment of the Dusseldorp Skills Foundation – today a global organisation in its own right.

The Lend Lease ‘community day’ is another example of its corporate citizenship. One day every year the entire organisation closes down and employees globally work for charity or community support organisations. Examples of what this assistance might be include financial advice for the local volunteer welfare agency, painting houses for disabled people or bush regeneration work. Each business unit can organise its own community day or select from a range of pre-organised activities.

The Lend Lease culture is a young one, both psychologically and chronologically. This is probably the result of Dick Dusseldorp’s original philosophy. When asked why he had been willing to place young people in positions carrying large responsibility, he answered;

“Personal experience. I was thrown into a job I had no preparation for at the age of 25. After three months in that job, I was put in charge of 2000 people on 20 sites scattered all over the
country side. When your young, you don’t doubt yourself….I wasn’t afraid to give young people responsibility because I had been able to rise to the occasion myself,” (Murphy, 1984, pp.2)

Prior to the acquisition of ERE, 74% of employees were under the age of 40 with the majority (39%) aged between 22 and 30 years of age. The ages of most CEO’s in the organisation also indicates a readiness on the part of management to promote from within at relatively young ages as compared to most other companies. The impact of the ERE acquisition was noted in the 1996/97 Annual Report perhaps due to the impact that it had upon the age demographic of the organisation.

Table 5.1 Employee Age Demographic – Showing the impact of the ERE acquisition

<table>
<thead>
<tr>
<th>Age</th>
<th>30th June, 1996</th>
<th>30th June, 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;21 years</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>22-30 years</td>
<td>39%</td>
<td>30%</td>
</tr>
<tr>
<td>31-40 years</td>
<td>29%</td>
<td>34%</td>
</tr>
<tr>
<td>&gt;40 years</td>
<td>26%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Other statistics that assist in terms of understanding the rapidly changing nature of the organisation and its culture, are those relating to the number of employees overseas and the years of service. The percentage breakup of employees by years of service, as depicted in the 1996/97 Annual Report is perhaps the basis of many of the issues that will be described below and the cultural issues described above. Again the acquisition of ERE had a significant effect upon these figures.

Table 5.2 Percentage Break-up of Employees by Years of service

<table>
<thead>
<tr>
<th>Age</th>
<th>30th June, 1996</th>
<th>30th June, 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>66%</td>
<td>72%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>21%</td>
<td>17%</td>
</tr>
<tr>
<td>11-15 years</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>16-20 years</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>20+ years</td>
<td>3%</td>
<td>2%</td>
</tr>
</tbody>
</table>

What becomes immediately clear by looking at these figures is that Lend Lease has a high staff turnover. The development of cultural knowledge and practices requires time to develop and given
the rate of change that the organisation continues to place itself in, the continued maintenance of the old culture, if that is the goal, becomes more difficult.

The high turnover is consistent with Lend Lease’s movement into the more knowledge intensive service industries of funds management, information technology etc. Most other organisations that consistently have high staff turnovers are firms that are composed of highly specialized labour, e.g. consultancy companies. The general mobility of labour in these industries is high. At least within Australia, Lend Lease has a very good reputation both in terms of results and the way in which it treats its employees, as such, there is no shortage of talented people who would like to work for the organisation, or companies that would like to employ people from Lend Lease.

This creates a situation where young, talented and in general ambitious people are pitted against each other in order to further their careers. Essentially this is quite good in terms of achieving good financial performance but as already discussed less desirable from the perspective of trying to develop and maintain a sense of identity across the greater part of the group.

"The fostering of individualism and competitiveness does have a price. The price is friction — a degree of friction inconceivable in any hierarchical organisation. However, losses by attrition have always been weighed against the high level of collaboration and respect that develops among those who swim and survive" (Murphy, 1984pp70)

Roy Robinson, former NSW Manager for Civil and Civic was also quoted in Murphy’s book in regard to this cultural characteristic.

"It has its disadvantages....it was just like throwing somebody into a pond. If they swam, they lived. If they sank, they drowned. A lot didn’t swim."

(Murphy, 1984pp67)

The effect of other national and corporate cultures on the group also has a large impact. The graph below shows the change in percentage break-up by geographic location for Lend Lease employees. The major change is the result of the ERE and Yarmouth acquisitions. It should not be forgotten that these organisations had their own corporate cultures, like the MLC at the time of its acquisition that further dilute what had traditionally been identified as the Lend Lease culture.
Graph 5.1 Percentage Break-up of Full-time Employees in Australia as compared to Overseas (1998 Annual Report, Lend Lease Corporation)

The Lend Lease Values

The values to which Lend Lease subscribes would appear to change, at least in the written form, as much as the other characteristics of the organisation. At the time the case study began, participants in the company’s orientation process were sent a package of reading material that included a list of 11 Lend Lease core values. The values as described in the package are as follows;

- Follow the Highest Ethical Standards
- Lend Lease is its People
- Everyone Wins
- Customer Focused
- Learn for the Future
- Be the Best
- Communicate
- Flat Structure
- Results Focus
- Have Fun
It was unknown how long these values had been circulating within the *organisation*, however, there was a growing recognition, that they were loosing their validity with regard to the *organisation’s* new size and scope.

"The current values grew from an organisation based in Australia, focused on Australian business and staffed by Australians. The growth in the group globally, the number of joint ventures and the changing expectations of employees is challenging the validity of some of our values" (Memo 19/6/1996)

The memo quoted from above also included the following table where a new proposed set of corporate values are put forward. These particular values are more descriptive in nature and consistent with the language used in the *organisation* when describing successful projects or achievements.

**Table 5.3 Proposed Values for Lend Lease: Excerpt from Internal Memo Dated 19/6/1996**

<table>
<thead>
<tr>
<th>Key Area</th>
<th>Includes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dare to be different</strong></td>
<td>Aspire to change the game (for us and customer)</td>
</tr>
<tr>
<td></td>
<td>Strive for excellence</td>
</tr>
<tr>
<td></td>
<td>Rebels with results</td>
</tr>
<tr>
<td></td>
<td>Irreverent/cheeky/not rule bound</td>
</tr>
<tr>
<td></td>
<td>Embrace innovation</td>
</tr>
<tr>
<td></td>
<td>Carpe diem</td>
</tr>
<tr>
<td><strong>Deliver for all Stakeholders simultaneously;</strong></td>
<td>Share rewards</td>
</tr>
<tr>
<td>Employees</td>
<td>Work should be personally fulfilling/people are equal</td>
</tr>
<tr>
<td>Customers</td>
<td>Customer focus</td>
</tr>
<tr>
<td>Shareholders</td>
<td>Work for the greater good</td>
</tr>
<tr>
<td>Community</td>
<td>Community spirit</td>
</tr>
<tr>
<td>Suppliers</td>
<td>Make win/win solutions</td>
</tr>
<tr>
<td><strong>Everybody adds value</strong></td>
<td>Profit from diversity</td>
</tr>
<tr>
<td></td>
<td>Empowerment</td>
</tr>
<tr>
<td></td>
<td>Team work</td>
</tr>
<tr>
<td></td>
<td>Lack of hierarchy/boxes</td>
</tr>
<tr>
<td></td>
<td>Knowledge sharing</td>
</tr>
<tr>
<td></td>
<td>Include people in decision making</td>
</tr>
<tr>
<td>Learn together</td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td></td>
</tr>
<tr>
<td>Invite/offer contribution get involved</td>
<td></td>
</tr>
<tr>
<td>Voluntarism</td>
<td></td>
</tr>
<tr>
<td><strong>Judged by performance</strong></td>
<td></td>
</tr>
<tr>
<td>Results focus/no surprises</td>
<td></td>
</tr>
<tr>
<td>Flat structure</td>
<td></td>
</tr>
<tr>
<td>Results not status</td>
<td></td>
</tr>
<tr>
<td>Deliver</td>
<td></td>
</tr>
<tr>
<td>Project focus</td>
<td></td>
</tr>
<tr>
<td><strong>Integrity</strong></td>
<td></td>
</tr>
<tr>
<td>Honest, open</td>
<td></td>
</tr>
<tr>
<td>More than the law</td>
<td></td>
</tr>
<tr>
<td>Professionalism</td>
<td></td>
</tr>
<tr>
<td>The Lend Lease test</td>
<td></td>
</tr>
</tbody>
</table>

As noted, the Memo from which the above table is quoted emerged mid-way through 1996, six months prior to the beginning of the case study. The next public airing of the debate occurred at the organisation’s ‘Insight’; a description of which will be given below. At the conference one of the keynote presentations was on the corporate values and a set of four new values were presented. Although senior management had developed these new values prior to their presentation, the main point of the presentation was to encourage people to give their input into the formulation of the new values.

“We’re asking for your opinions on these values going forward. Are there other words which you think would better describe the sorts of values which are appropriate for your business, for you personally and for where you work”(Enewslink, 21/3/97)

There was either no input or the input agreed with that of the senior management as the final values remained unchanged to those proposed in the article quoted above. They are as follows;

- Respect for the Needs and Aspirations of all with whom we have a Relationship
- Capacity to Change the Game for a Better Solution
- Exceeding Expectations
- Integrity is Non-Negotiable

Collins and Porras in their 1994 study of visionary companies suggested that a common feature of the companies they considered to be visionary was the enduring nature of their core values. They describe core values as,
"The organisation’s essential and enduring tenets – a small set of general guiding principles; not to be confused with specific cultural or operating practices; not to be compromised for financial gain or short-term expediency" (Collins & Porras, 1994pp73)

It is interesting that despite the considerable effort that was taken in order to develop the new values, very few people I spoke to could name all four of them, if asked. As such, one could reasonably question, how ‘core’ can the core values be?

It would appear that although few people could tell you what the core values were, when asked, most were able to describe the behaviour that is considered appropriate within Lend Lease, or what it takes to survive and succeed in the Lend Lease culture.

In MLC, another set of values has emerged, as part of their process simplification effort. REACH, the anagram for the values;

- Resolution
- Empathy
- Accuracy
- Convenience
- Honesty

is well known within the financial services division and subscribed to by the employees, as opposed to the official Lend Lease values shown on the previous page. REACH has been in existence longer than the official values and forms a part of the overall change process that occurred in MLC. Consequently, these values are tied to the experiences of the employees.

Similarly, Lend Lease’s property services division, Civil and Civic had also developed its own set of core values. They are as follows;

- **INTEGRITY** to ensure no question or innuendo ever surfaces
- **BE THE BEST** through fabulous and outstanding work
- Get on with it, use your initiative and **JUST DO IT**
- Never rest on our laurels, raise hell and constantly **DO IT BETTER**
- Create a **COLLABORATIVE** supporting and exciting work environment
It was not known how long these values had been in place, however, they were not well known in the same way as ‘REACH’ was within the Financial Services division.

The official Lend Lease core values have by necessity been made very general in order to accommodate the various interpretations and perspectives across the organisation. The difficulty with this is that no one appears to strongly identify with them or feel that they really describe what it means to work in Lend Lease. As noted in the previous section on the Lend Lease culture, there is a high level of respect for others ‘who have survived’ and understand the culture. This understanding is tacitly held, in the sense that it is rarely communicated.

It is for this reason that the best descriptions of the values come by way of discussions of different topics and the way in which people approach them. An example of this is shown below. The context for this quotation was an email conversation on knowledge management in Lend Lease. The response was from a senior executive in the organisation to a previous email suggesting various definitions of knowledge that could be considered in the project and is as follows;

“In our usual way, we have gone straight past a definition of knowledge, in search of actions that we intuitively feel would advance our capacity to act. I like the definition potential to act – it nicely separates thoughts from actions. It implies that knowledge once acted upon becomes something else and our purpose is always to try to add value in the transformation. As long as we are doing so, I don’t think it matters too much where we start. The constant aim of this organisation is to keep moving and by so doing, discover more than we might have otherwise by holding concepts in thought mode. Sometimes it is better to be right than mobile, but usually only when things are very likely to go badly wrong. Provided we lace mobility with risk management, ‘tis better we move on, I think. History is a better judge than anticipation.” (Email, 22/8/1997)

The quotation describes a number of informal, rules regarding what could be described as the Lend Lease way to do things. If it is accepted that for most people in the organisation these values are tacit, communication of the values becomes difficult, particularly in light of the rapid overseas expansion.

It is interesting to compare the ideas in the quote above with the autopoietic perspective presented in the previous chapter. Validity, in Lend Lease is based upon actions as opposed to theory. The actions of the project will in due course define what knowledge is for Lend Lease. Knowledge is not represented abstractly, as the ontogeny of interactions will create the reality of knowledge management for Lend Lease. The dichotomy between theory and practice is removed and a more
holistic notion of knowledge and practice is implicitly operationalised. In essence the organisation 'lays down its path in walking' (Varela, 1987)

**The Lend Lease Mission**

Accepting the enigmatic nature of both the corporate culture and values, the purpose or mission of the organisation is even less explicit. Collins and Porras (1994) describe the notion of organisational purpose as,

"...the set of fundamental reasons for a company’s existence beyond just making money.”(Collins and Porras, 1994pp78)

Arie de Geus (1997) in his book on “The Living Company” suggests, somewhat idealistically, that

“Like all organisms, the living company exists primarily for its own survival and improvement: to fulfil its potential and to become as great as it can be.”(de Geus, 1997pp18)

From the interviews conducted, the most common response to the question: What is Lend Lease’s purpose? was to achieve 15% profit growth. The probable reason for this response is that for 23 consecutive years Lend Lease has achieved approximately 15% profit growth over the previous year. As such, the goal of continually achieving this end has become somewhat of a main stay.

A review of the Chairman’s address from Annual Reports of the previous ten years revealed a range of missions, goals and statements that reflected the issues the organisation was dealing with at the time. In 1990, the organisation had expanded into financial and corporate services. The annual report of this year suggests that the most important guiding principle of this expansion was the provision of “...continuous and steady growth.” (Horney,1990) At this time the companies main business objective was “...the creation and management of assets for our customers.”(Horney,1990). In 1991, the key change was the decision to embrace workplace reform with the intention to be become a leader in the reform movement. This involved “...the transformation of Lend Lease into a Learning Organisation”(Horney, 1991).

During 1992/93 reports for financial services were separate from the group report. The continued expansion and diversification placed greater demands on the organisation’s people. The need to “manage risk”, be a “low cost producer” and develop a “...partnership between employees, shareholders and management” (Horney1992,1993) were highlighted. It was also noted that
“management’s task is to ensure that the balance is struck [between competing employee priorities] and where appropriate, a leadership position is taken” (Hornery, 1992).

By the mid-1990s the focus of Lend Lease was continuing to change. The statement was made that Lend Lease will be “a leading player in financial services through the turn of the century” (Hornery, 1993). This shift was coupled with the realisation that the organisation’s future would depend upon its “...ability to compete in the international marketplace” (Horney, 1995). The growing impact of internationalisation was further recognised in 1996, with the observation of the need to “enhance the culture with a global dimension”, ensuring that “...the core businesses are internationally competitive in cost and service levels while continuing to seek out new opportunities” (Hornery, 1996).

In 1997, the address was more reflective. Mr Hornery observed that Lend Lease's “entrepreneurial endeavours have always been an integral component of [its] culture”, facilitated by a “commitment to corporate governance, the sharing of created wealth with employees, the desire to be the best employer, focus on civic design and the environment and the companies role in the community” (Hornery, 1997).

During the case study, I was unable to find a basic mission statement such as “To be the best Property Company in the world” or “To provide the best Real Estate services”. At least in terms of Collins and Porras’ (1994) research regarding corporate missions and purposes, Lend Lease does not fit the mould. In the companies included in the Collins and Porras study, the company founders often lay done the purpose of the organisation, for example, Johnson and Johnson has the famous credo originally developed by Robert Johnson.

It would appear that for Lend Lease continued growth is the basic purpose, to which all other goals are directed. Much like the values and culture of the organisation, the corporate purpose is held tacitly, to borrow Polanyi’s term, and consequently difficult to determine from the perspective of an outsider.

**Summary**

In this chapter I have given a basic overview of the history and qualitative characteristics of Lend Lease Corporation. From this description the following points can be noted in terms of the way in which the organisation, over time, has interacted with its environment.
The examples of the Blues Point Tower and Castle Crag developments involved conscious enactment of the legislative environments of the organisation. It should be noted, however, that the role of Dusseldorp in each of these events was significant and it could be argued that without his conceptualization of the issues the changes may not have taken place. Either way, the organisation could be seen to be actively creating its environment rather than reacting to it.

On a different level, taking control of the design and financial aspects of projects at a relatively early stage of the organisation's life also gave Civil and Civic greater control of its environment. Although this too could be attributed to Dusseldorp's vision, it is a pattern of behaviour that has continued since his retirement from the organisation in 1982. This is evidenced by the companies movements into Asia, the US and Europe, where in each case the approach the company adopted had a key effect on the way in which the organisation interacted with its environment; physical and non-physical.

In terms of knowledge management and its significance to the organisation the following points may also be made:

The continuing push towards globalisation of the organisation has had the effect that old processes of knowledge sharing are no longer viable on a world-wide basis. The pace at which the organisation is changing is quite rapid as a function of a number of acquisitions in the US and, since the completion of the case study, Europe. At the same time, other businesses are being sold which combined means that a number of new people have been brought into the organisation whilst others have left. The process of 'contexture', as discussed in Chapter 4, that previously worked in the organisation, could be said to be breaking down and as a result new processes are required in order for the different parts of the organisation to learn together.
Chapter 6

Organisational Responses

In this chapter, the organisational responses displayed by Lend Lease Corporation will be examined. The examples discussed occurred between January and December, 1997. The projects that occurred at Lend Lease during this time will not be described in detail during this chapter, however, a full description of the projects under examination may be found in Appendix 3.

In order to discuss Lend Lease's responses to the knowledge management issue this chapter is divided into 4 parts. In Part 1, I provide a description of the methodological elements of the case study, including details of how the case study was conducted and key actions taken in the context. In Part 2, I provide a summation of the issues that Lend Lease needed to address with regard to knowledge management. Some of these issues may be found in most organisations, others were more specific to Lend Lease and the way in which the organisation had grown over time. Combined with the description of Lend Lease Corporation given in the previous chapter, this section presents a rich picture of the issues identified during the earlier months of the case study period.

Most of the projects that occurred during the case study were focused on the establishment of what may be termed enabling mechanisms. In Part 3 of this chapter, I will identify and conceptualize these enabling mechanisms in terms of a developmental model of the way in which a knowledge management capability appeared to develop in Lend Lease and potentially could in other organisations. The rationale for the model will be explained in terms of the projects observed during the case study and organisational changes that have occurred since completion of the formal study period.

In Part 4 of this chapter, the working hypotheses that were put forward in Chapter 3 regarding the nature of an organisation, the organisational environment and how the two interact will be discussed in terms of the outcomes of the Lend Lease case study.

It should also be noted that many of the projects that are discussed in this chapter have continued past the completion of the case study, and as such a full critique of their impact on the organisation is not possible.
The impact of the length of the case study on the observations I make in this chapter will be discussed in Chapter 7 of this thesis, as it forms an important component of any critique that could be made of the research methodology. I will also examine other limitations of the case study research in Chapter 7, as they impact upon the rigor of the propositions put forward in this chapter.

Part 1 - The Case Study Methodology

This section will discuss the research methodology used during the case study. The one year case study in Lend Lease Corporation was organised mid-way through January, 1997 and officially began on Wednesday 29th of January. For ease of explanation the case study research process is divided into two stages, the first involving intensive qualitative research to determine the issues the organisation was experiencing in managing its knowledge, the second phase involving mostly participant observation of a range of projects that emerged across the organisation in response to these issues.

As described in Chapter 5, Lend Lease now operates in all regions of the planet with its headquarters in Sydney. Most of Lend Lease’s Sydney operations were housed within the Australia Square complex, therefore providing easy access to a large number of people. MLC employees worked in North Sydney and were also easily accessible. Employees from Lend Lease operations in other regions did not form part of the sample for the case study and therefore all data was generated from the Australia Square and North Sydney offices.

Initially, two to three days a week were spent on Level 15 of Australia Square, but within a month this expanded to four days a week, the fifth day spent at University. This pattern of attendance remained fairly consistent throughout the year, regardless of whether interviews were to be conducted or meetings attended. Unplanned days were spent reading and or compiling data. These days often ended up as being the most productive for serendipitous reasons, a number of impromptu meetings or discussions took place which provided a greater understanding of the culture and the way in which the organisation, in general, operated.

Stage 1 - Research Methodology

The first phase of the case study was structured in order to get a picture of the issues that were perceived to be limiting the ability of people within the organisation to manage their knowledge
effectively. In order to achieve this a series of semi-structured interviews with people from all levels of the organisation were undertaken. Selection of who was to be interviewed followed a process similar to the snowball sampling method of Knoke and Kulkinski (1982). Snowball sampling involves allowing the participants of the interview process to define the boundary of the social system. The case study focus was the social system composed by people who were interested in, or involved in, the knowledge management efforts at Lend Lease. This social system obviously did not relate to the organisational chart of the company and crossed both business unit and divisional boundaries. Nor did it follow the hierarchy of control within the organisation. Therefore it was necessary for the sampling technique to be able to

"...define network boundaries when communicative interactions span physical boundaries such as departments and organisations." (Sandow & Rhodes, 1996pp188)

The process of snowball sampling involved, beginning the interview process with the few people known from the interviews the previous year, and then building an understanding of who was involved in the knowledge management initiatives within the organisation. These people were then asked who they considered would have an informed perspective on the research topic. This process continued until there were no more new names provided. A total of 36 semi-structured interviews were conducted between January 29th and the 13th April, only two people declined to be interviewed. The semi-structured interviews were not taped and as such insights arising from these interviews are derived from my notes at the time.

Two names were supplied, during the snowball sampling process, of people overseas who would be interested in the topic. When contacted, these people said that at this point in time, the matter was considered important, however, no initiatives were underway.

Participants were contacted via phone, followed by a facsimile that gave a synopsis of the research. There were no guiding questions supplied with the fax. In general people were asked to describe their current role in the organisation and the previous positions they had held. In answering this question the discussion would move through a range of topics including the purpose of the organisation, organisational values, current projects and issues relating to knowledge management.

Following the semi-structured interviews, a workshop was conducted, to which all the people who had been interviewed were invited. The purpose of the workshop was to assess the accuracy of interpretations arising from the interviews and provide some input for the participants in terms of the
research findings thus far. A potential research methodology for the remainder of the case study was also presented. Participants in the workshop were encouraged to critique both the theoretical approach to the topic (i.e. autopoietic theory) and the interpretations of the issues they were facing with regard to knowledge management.

The workshop took place on the 21st April and had a duration of 2 hours. The first 20 minutes involved a basic overview of autopoietic theory and knowledge. For the next 15 minutes, participants were asked to break into groups of 4 or 5 and discuss what they perceived to be the issues that were limiting their ability to manage knowledge more effectively. Following this, approximately 20 minutes was spent as the groups fed back the results of their discussions. The results of this process were collated into a number of key issues on some butchers paper. As a group, the participants then prioritized the issues in terms of importance.

Having agreed on the issues, the results of the interview process were presented for discussion/critique. Following a short break, a proposed research approach for the remainder of the case study was presented, again participants were encouraged to critique and give comment. The workshop was then concluded.

The workshop completed the first phase of the case study.

**Stage 2 – Research Methodology**

The methodology for this stage of the case study, was based on a participant observation approach. From the research undertaken in Stage 1 of the case study it was clear that initiatives relating to knowledge management would be occurring at two main levels,

- organisation wide (corporately driven), and
- within the business units.

In order to study the organisation’s response as a whole, it was therefore necessary to observe as many of these initiatives as possible. This task was further complicated by the complexity of the issue under study. Like the learning organisation, knowledge management is multidisciplinary and involves a range of supporting projects if it is to be successful. As has been noted in Chapter 6 and Appendix 3, there were a large number of information technology/database development projects
underway within Lend Lease at the time of the case study. These projects, although related to the thesis topic, were deemed to be outside the boundary of the research. Projects relating to succession planning, executive remuneration, leadership etc were also deemed to be outside the research focus.

Although this assumption limited the scope of the research to a manageable size, it had limitations when it came to the analysis of the organisation's response to the issue. The development of the databases formed an important part of the process by which the organisation developed its ability to manage knowledge, however, as it did not form part of the participant observation of the organisation, limited information about this process was gathered. A full discussion of the implications of this methodological assumption is discussed in Chapter 7 as part of the critique of the research methodology.

Observation of the projects that were deemed to be within the scope of the research involved sitting in on group meetings and the collection of project briefs and memos. The goal was to observe the way in which the projects evolved individually over time. The separate observation of these processes would then be combined during analysis in order to produce a picture of the way in which the organisation as a whole responded to the knowledge management issue.

Observation of the projects continued until the end of 1997, providing a perspective on one year's worth of change in the organisation. As a consequence many of the projects that were under observation continued past the completion of the case study and at the time of writing are still underway. Contact was maintained with these projects during the period of writing up the thesis in order to provide more context to the analysis. The process of maintaining contact was also important due to large structural changes that were ongoing within Lend Lease.

Information gathered during 1998 was only of very limited detail, however, and although assisting the researcher with regard to understanding the overall development of the organisation does not form a formal part of the case study.

Part 2 - Knowledge Management Issues in Lend Lease

In discussing the issues Lend Lease experienced with regard to knowledge management, there are two views that need to be made explicit. The first view relates to issues identified by myself as a result of 35 semi-structured interviews that took place in the initial phase of the case study. These issues were identified from a background of reading on knowledge management and observations
made of the organisation up to that point in time. It should be noted that for the case study period I spent up to four days a week located in the organisation (see Appendix 1 for a full discussion of the case study methodology).

The second view is that of the Lend Lease employees. These issues were identified by the same people who participated in the semi-structured interviews, at a workshop on the topic of knowledge management. The issues identified from this perspective describe the key points that need to be addressed in order for the organisation to effectively manage its knowledge. The issues were as follows;

**View 1**

**Recreating the wheel:** This issue relates to the observation of many employees that due to the decentralised nature of the organisation and the rapid movement of people from one position to another, there was a tendency for teams to undertake similar or the same projects in response to perceived organisational needs. These projects were often undertaken without knowledge of previous or concurrent attempts to do the same thing somewhere else in the organisation.

**Consistency:** There was a perceived lack of consistency in the messages received by, and coming from, the different parts of the organisation. This inconsistency could be with regard to the direction of the organisation as a whole, the structure of the organisation and the purpose of the organisation. This issue also related to the branding of different businesses throughout the Lend Lease group.

**Identity:** As described in the qualitative overview (Chapter 5), determination of Lend Lease’s purpose is not easily achieved. The lack of a clear identity appeared to work against the development of a group wide mission.

**Cultural Difference:** This issue was twofold in that it related to both national cultural differences and differences of culture between business units. The process of business varied widely depending upon which country Lend Lease operated in and the business under study.

**Equality of Benefits:** Difficulties in determining what constitutes ‘equal’ across the world in terms of employee benefits, was a point on which the organisation was also attempting to find solutions. This particular issue was of greatest significance with regard to expatriate employees where large changes in lifestyle and the standard of living were involved.

This concludes the issues that were drawn from the interview process. Issues observed by the employees at the workshop held during the case study are described below.
View 2

Determining the relevance of information: this refers to the difficulty of assessing when information is useful to another person. An example to illustrate this point could be the following; *Two employees meet to discuss projects they are working on. By chance these two employees are also doing independent research on one of the groups major customers. The research on these customers doesn't come up in conversation and so although they would both be willing and would benefit from the opportunity to share their information, they continue to work independently replicating each others work.* There were, at the time these issues were identified, no mechanisms in the *organisation* beside the chance that one of the individual’s mentioned this activity or another employee mentioned it that these people would know of the commonality in their work.

Need to develop a culture of sharing and learning: Due to the highly decentralised nature of the *organisation*, and the perception of unequal treatment of business units in the past. Requests for information from other parts of the business are often treated with suspicion. This situation also operates within the business units themselves, as individual’s are unwilling to share due to the belief that by sharing their knowledge the *organisation* will need them less i.e. knowledge is power.

Globalization - Cross Cultures: This issue is similar to that identified in View 1 above. It involves developing an understanding of the different ways of doing business around the world and how this effects working across national borders.

Logistics - information systems to deal with the above issues: Even if the issues described above were addressed, the sharing of information globally across the *organisation* requires access to an effective information system. The development of such a system has been elusive for Lend Lease in the past. This was due to the independence of the business units in relation to capital expenditure decisions. This had resulted in the different parts of the *organisation* each having their own information system, tailored to their particular needs. As a result there was an inconsistent IT platform across the *organisation* with some businesses operating Macintosh based technology and others on IBM compatible technology. There were also a number of different email systems in operation that would not always allow communication between the business units. These issues were compounded by the rapid expansion of the *organisation* and the need to integrate newly acquired businesses, with their own existing IT systems, into the Lend Lease group.

Another issue that did not emerge at the time of the case study but has effected the way in which knowledge management projects have emerged, is the variety of perspectives on what knowledge management may mean across the *organisation*. Appointment of a Chief Knowledge Officer for the group did not occur until October, 1998 – almost a year after the planning or occurrence of the projects that I will discuss in the next section of this chapter. As a consequence, many of the projects
that were reviewed were not driven by a holistic, group wide framework for knowledge management. The projects more accurately represent the first steps of the *organisation* on the path to competently managing knowledge-related assets.

The issues described in this section are not drawn from an explicit strategy of the *organisation* but relate only to the research described in this thesis.
Part 3 - Enabling Mechanisms and Associated Projects

In this section a developmental model for knowledge management will be proposed, based upon the observation of organisational responses during the case study. The model, shown in Figure 6.1 below may be considered as an extension of the developmental model (Figure 2.2) I proposed in Chapter 2 of this thesis. Like Figure 2.2, there is an assumption made that particular organisational processes need to be in place before the organisation can make the shift to a new way of operating. The detail order in which these processes develop does not necessarily need to follow the order shown on the diagram, however, it is argued that the enabling processes underpinned by these developments must be in place.

![Developmental Model of Knowledge Management](image)

Figure 6.1 Developmental Model of Knowledge Management

The diagram distinguishes two key phases in an organisation's development towards the knowledge management ideal. The first phase involves the ability to effectively manage and share information. This phase is largely based on the establishment of an information technology infrastructure within the organisation. Although initially the establishment of this infrastructure may be considered the easiest step, it would appear that many organisations have difficulty in successfully implementing it.
“IT capital spending per white collar worker has tripled since 1980, while overall IT spending is projected to increase by 60% over the next five years. Yet despite all this spending, companies that manage to extract significant business value from their IT investments are rare exceptions to the rule” (Battles, Mark & Ryan, 1996pp117)

The difficulty associated with gaining value from information systems has drawn considerable comment in the literature. Some commentators claim that rather than increasing spending, companies consider their information systems to produce more problems than they solve, with the result that organisations are downsizing their information systems and departments (Sigismund, 1995).

In many Western organisations, investment decisions regarding IT are made on a financial rather than strategic basis. By comparison,

“In Japanese corporations, IT projects are not assessed primarily by financial metrics; audits and formal approval for investments are rare. Instead, because operational performance goals drive most IT investments, the traditional metric is performance improvement, not value for money.” (Bensaou & Earl, 1998pp123)

Interestingly, capital expenditure on information systems by Japanese firms is equal to roughly half that spent in Western organisations (Bensaou & Earl, 1998). This has produced a misconception that the Japanese lag behind the West in this area. Although from a purely technological perspective this may be the case, the Japanese would still appear to be more effective information managers. Performance criteria take the highest priority in Japanese firms, with the consequence that although the technology may be old, it is fit for the purpose it was acquired for and people have the capability to use it effectively.

The Japanese approach does run the risk, however, of producing in inconsistent IT platform. This means that there are incompatibilities between the different computer systems in the organisation. Such was the case at Lend Lease, the independent computer systems of the different business units had developed without reference to each other. The Property Services system was incompatible with the Financial Services system for example. This issue was further complicated by the organisation’s rapid expansion and the need to assimilate the IT systems of newly acquired businesses. Consequently, considerable spending was and continues to be required in order to produce a consistent IT compatibility across the organisation. Without this basic compatibility even the simple process of sending an email can be problematic.
To facilitate the gradual consolidation of Lend Lease’s IT functions, an IT Executive Committee was established. The committee, made up of a combination of senior executives, consultants and IT managers, was responsible for the determination of standards, rules and protocols for the group’s IT system. The protocols include such things as whether or not databases should be Lotus Notes based; the type of graphics file that may be placed on the intranet and its various databases; whether or not hardware will be IBM compatible or Macintosh based. These rules and protocols provided the basis from which the information system can grow organically as the company and the business units require whilst maintaining compatibly across the businesses.

Through the establishment of the IT Executive Committee, control of the organisation’s IT system shifted out of the business units and was effectively centralized at the corporate level. This also had the effect that people involved in the management of the IT function in the different business units, got together on a regular basis, hence in a small way, increasing inter-business unit communication. The centralization of control in relation to the IT system represented the first sustainable step towards the effective management of information. With this change, the gradual consolidation of the IT infrastructure into a consistent group wide platform could take place.

Davenport & Prusak (1998) note that Hewlett Packard underwent a similar process in the establishment of their information system.

“HP’s IT managers established a general policy that Notes should be used for discussion-oriented applications and the [WorldWide]Web for publishing purposes...One reason the firm’s various knowledge repositories are so useful is that HP has a common set of tools for word processing, presentations, and spreadsheets. Any document produced within the company therefore can be read and modified by other users.” (Davenport & Prusak, 1998pp123-125)

Such developments are the technical basis from which information sharing may take place, the process of centralizing control of the IT systems also did much to address the logistical issues discussed in Part 1 of this chapter. Not only was control of the information systems centralized, so too was control of the information. This occurred in two ways. The first was in terms of communications. Establishment of a Global Communicators Network (see Appendix 3) largely addressed issues relating to the inconsistency of messages throughout the organisation. Problems relating to employees reading news about their organisation in the papers before being told through official internal channels had been greatly reduced by the time the case study had ended. David Higgins, (the Chief Executive) and other directors would regularly use Enewslink (see Appendix 3 for a description of the different communications vehicles used in Lend Lease during the case study) as a medium for general announcements.
The project also resulted in significant changes to some of the communications vehicles used within Lend Lease. For example, Videolink ceased to be used as a communications vehicle, as did the Newslink Noticeboard. Interlink changed to become a more substantial magazine produced on a quarterly as opposed to, monthly basis. This also accounted for the observation that some employees were using Interlink to give to clients as a way of providing a picture of the organisation's functions.

The second way in which information is centralized is through the development of databases. Projects such as the People Link database (see Appendix 3), that was developed to provide basic information on employees, is an example. Without a consistent IT platform, however, projects such as this have limited value as only a small proportion of the organisation would be able to access the information. Other examples of database development in Lend Lease include Property Services, who had a LotusNotes based ‘Business Development’ database to keep track of interactions with clients and the progress of projects. Similar databases were also established in Lend Lease Retail and Lend Lease Investment Services amongst others.

Within the business units these developments act as one level of centralization. The next level occurs across the group in terms of databases with information on inter-business unit activities. The development of the Joint-venture Knowledge Base is an example of this. The database provided a centralized repository of information on Lend Lease’s many and varied joint-ventures. Prior to its establishment, each business unit would have to be approached independently in order to gain a picture of Lend Lease’s joint venture activities.

Centralizing of information across the group was further facilitated through the development of a group wide intranet. In Lend Lease the intranet was called the ‘Hive’. In theory, by linking the different databases throughout the organisation to the Hive electronic information about the other business units would be available to all employees. Access to the other databases was not automatic, however, and required approval before passwords into the different databases were provided. During the period of the case study, these events were only planned and did not begin to occur until almost a year later. Once the intranet is in place and access to the different business unit databases is possible, the first phase described here as information sharing has been completed, at least from a technological perspective.

The development of databases such as those described above is analogous with what is often described as the documentation, or codification of knowledge into a form that can be managed. In Nonaka & Takeuchi’s (1995) terminology this involves the process of making tacit knowledge
explicit. This process of documenting, codifying (Davenport & Prusak, 1998) or capturing knowledge (Sparrow, 1998) is where most of the confusion about knowledge management occurs. This stems from the confusion over the difference between knowledge and information already discussed in Chapter 4. Davenport and Prusak (1998) identify four basic principles of knowledge codification,

1. Managers must decide what business goals the codified knowledge will serve (for example, firms whose strategic intent involves getting closer to the customer may choose to codify customer knowledge).
2. Managers must be able to identify knowledge existing in various forms appropriate to reaching those goals.
3. Knowledge managers must evaluate knowledge for usefulness and appropriateness for codification.
4. Codifiers must identify an appropriate medium for codification and distribution. (Davenport and Prusak, 1998 pp69)

The perceived issue relating to knowledge codification is in the determination of which information is relevant to or useful for inclusion on a database. The Lend Lease employees at the workshop identified this point as the number one issue. The problem with most discussions on codification, however, relates to the range of typologies that are generated to describe different forms of knowledge. As discussed in Chapter 4, many of these typologies are based upon Polanyi’s tacit and explicit distinctions of knowledge or derivatives, that themselves are not stable. The notions of useful, meaningful and relevant are not qualities of the information, but a function of the individual’s context. As such, it is not possible to codify knowledge into a form that may be placed on a database.

Davenport and Prusak (1998), drawing on Polanyi’s work acknowledge that tacit knowledge cannot efficiently be codified into a database form.

“...the codification process for the richest tacit knowledge in organisations is generally limited to locating someone with the knowledge, pointing the seeker to it, and encouraging them to interact.”
(Davenport and Prusak, 1998 pp71)

As such the type of information that is most effective on a database is that which acts as a signpost to the ‘real’ knowledge. There is only limited value in documenting large slabs of experience on a database as in order for knowledge sharing to occur, the development of congruities of context between the person who had the experience and the person who wants to learn about that experience are required. These congruities only develop through interaction. The general shift in focus of
knowledge management projects towards social interaction indicates a shift towards the second stage of the developmental model shown above, that of knowledge sharing.

**Knowledge Sharing**

In terms of changes to the environment of employees, the IT system provides increased access to information, but as described in Chapter 4, does not represent knowledge sharing. This is one of the limitations of the information processing perspective described in Chapter 4 and has led to a number of critiques of the idea of knowledge sharing, facilitated via information systems.

“In particular learning theorists have rejected transfer models, which isolate knowledge from practice, and developed a view of learning as social construction, putting back knowledge into the contexts in which it has meaning.” (Seely Brown & Duguid, 1991pp47)

Changes to the social system and the regular patterns of behaviour are also required before information is readily shared as a normal part of business. An important aspect of this process is encouraging employees to maintain the information on the databases. Particularly in an organisation like Lend Lease, where the culture is based around action rather than reflection and documentation, this is a significant shift. The value of the information on the databases, to the people in the organisation, rapidly diminishes over time if it is not kept up to date. This has the result that people often return to their old sources of information, as they perceive the database to be inaccurate.

To address this problem, changes to the non-physical environment, such as those that are proposed in Chapter 3, are required. To this point only changes to the physical environment of the individual have been discussed with technology forming the basis of the description thus far. As described in Chapter 2 changes to the non-physical environment are equally as important and often take the form of realigning remuneration, reward and recognition to encourage the desired behaviour (Kerr, 1975). Other researchers, (Graham and Pizzo,1996) who have examined the way in which organisations develop knowledge management strategies have found similar uses of remuneration for this end. The key point is this,

“...professionals are reluctant to share knowledge without powerful inducements.” (Quinn et al,1996b.pp11)
The alignment of pay structures to encourage the development of a knowledge management capability is particularly important in terms of the senior managers in the organisation. Without the support and enthusiasm of the senior managers in the organisation nothing will change.

"Furthermore, there is often considerable tension between the requirements of IS people and others in the project (who often want extensive involvement from top managers) and executives (who given their work situation may well be concerned with how they can limit their involvement as much as possible" (Mahring, 1996ppXI:2)

Typically the performance management of senior executives is linked directly to their responsibilities. As a consequence those managers who are given responsibility for knowledge management issues in their area, are evaluated on the delivery of organisational changes in this regard. Ideally, however, changes to pay structures should also spread to other people whose role means they are generating information that could be stored on the databases. Within Lend Lease, the performance management for senior managers does include alignment of their remuneration with regard to their particular responsibilities, however, other managers further down in the organisation are not currently assessed in this way.

Other processes such as promotion and, reward and recognition programs are also valuable in this process. All these mechanisms as discussed in Chapter 3, effect key motivators for knowledge workers (Tampoe,1996). The use of remuneration structures in the manner described is a generalization, however, and other factors also need to be considered. Successful careers within Lend Lease are dependent upon the employee’s ability to build strong personal networks and become known for the quality of the work they produce. In many ways the work that an employee places on the databases, or presents in workshops, is an advert for the quality of their skills and experience. As a consequence, within the Lend Lease culture, the maintenance of an individual’s generated information is something of benefit in that it has the potential to raise their profile within the company.

This point can also have the negative effect in that people place information on databases that could be described as an optimistic representation of their work. Long term this has a negative effect for the individual as eventually the value of their information is seen by the rest of the organisation to be limited and as a consequence is largely ignored. This point is further emphasized by the continuing increase in information that is available in the workplace and as Sveiby (1996) notes;
"This leads to a curious paradox. Although we have access to more information than ever before, we have become more and more dependent on the subjective opinions of those who filter information." (Sveiby, 1997 pp111)

As I will discuss in Part 3 of this chapter, behaviours would appear to self-organise around the information that is made available, with the consequence that the information would appear to have an ordering effect as already noted by Wheatley, (1992).

Assuming that the remuneration, reward and recognition processes are in place, the organisation begins to move into the process of knowledge sharing. Although the remuneration and promotional processes are likely to be based within the business units, senior managers begin to see the potential of cross business unit sharing, particularly if part of their performance bonus is derived from doing so. The linking of the various databases by the intranet, supplies the information basis to support this process, but more effective means often involve the establishment of communities-of-practice. The establishment of what can be termed communities-of-practice, is most effectively achieved when applied to a business function.

"Workplace learning is best understood, then, in terms of the communities being formed or joined and personal identities being changed. The central issue in learning is becoming a practitioner not learning about practice. This approach draws attention away from abstract knowledge and cranial processes and situates it in the practices and communities in which knowledge takes on significance". (SeelyBrown & Duguid,1991 pp48)

In the case of Lend Lease, the contexts to which this thinking will be applied initially is the management of major customers and the strategic, and business planning processes. Arguably, without a clear business purpose, the communities-of-practice gradually disappear, as people perceive they are gaining limited value from participation.

It is through the personal contact provided by the communities-of-practice that the process of knowledge sharing begins to take place. As discussed in Chapter 4, knowledge sharing, from an autopoietic perspective involves the creation of congruities of structure between individuals. It also provides the trust required to establish easy sharing of information. Most people when seeking new information will call someone they already know. As a second option they will call someone who was recommended to them by someone that they already know and thirdly they will approach a complete stranger for information. Historically, this process was termed the ‘3 phone call rule’ in Lend Lease. The assumption was that any information an employee needed about the organisation should be obtainable within 3 phone calls or less. There was a strong recognition from interview
participants that depending upon an individual’s personal network, the number of phone calls required to obtain information was steadily increasing with the size of the organisation.

Knowledge sharing within a community-of-practice, has a higher likelihood of success because the people who are involved in the relationship know each other and have begun the process of establishing structural congruities. Communities-of-practice, as they are conceptualized here, are based around face to face contact as opposed to virtual communities that can exist over the internet. This does not mean that they must be all based in one location, as part of the value of a community in this sense is that it can be global in nature. The face to face contact is fundamental, however, to their potential for knowledge sharing, for the reasons described in Chapter 4. Knowledge sharing

“...is a rapid, dynamic process. Its success depends on the shared language of the parties...discourse entails people putting their perceptions into sequences of words, and co-constructing the notion in the other person’s mind with that other person.” (Sparrow, 1998pp51)

The establishment of communities-of-practice may be achieved in several ways. Initially they could be facilitated through a series of ongoing workshops around a topic, at which the people involved get the opportunity for face to face contact. In between these workshops, communication can be maintained electronically. The establishment of relationships between the people in the group is important as with the establishment of the relationships comes the establishment of trust and the higher likelihood of knowledge sharing.

“Trust influences decisions by individuals about whether to share information and participate in task completion. (Mishra & Morrissey,1990) and is essential for group effectiveness (Tuckman,1965), especially in flatter structures with empowered teams.” (Hackman,& McLain,1994 pp2)

It is proposed that the combination of information sharing via email, or telephone, supported by regular periods of face to face contact allows for feasible knowledge management on a global and cross business scale. As the process continues, people involved in the communities-of-practice become familiar with the process and consequently it spreads to their other roles in the organisation. In this way knowledge management is reinforced on both the business unit and organisation wide levels.

Within Lend Lease this last stage of development, as proposed in Figure 6.1, was just beginning at the time of writing. The other stages of the model took approximately two years to occur. The
overall impact is as yet unknown, however, there would appear, at least anecdotally, to be a marked increase in communications between the different business units since the time the case study began.

The developmental process described above, like that described in Chapter 2 involved changes to both the physical and non-physical environments of the people involved. The system of interaction that was generated was socio-technical in nature. Knowledge management, viewed as the latest stage of organisational development, requires the same processes of change described in the earlier stages in Figure 2.2. The autopoietic perspective describes how the individual changes over time and through this what we describe as an organisation. In terms of effecting change therefore the same processes apply regardless of the form of change.

Based on these observations, more tightly defined outcomes from the case study will be outlined in the next section.
Part 4 – Towards an Autopoietic Perspective on Knowledge and Organisation

Given the "frame" under development in this thesis, the case study on Lend Lease Corporation provided a context against which to reflect the developmental processes (shown in Figure 2.2) discussed in Chapter 2, and the generic working hypotheses put forward at the end of Chapter 3. The working hypotheses related to the nature of an organisation, the nature of the organisational environment and the way in which these two notions interacted over time. These hypotheses were based upon the assumption that the interaction between the organisation and its environment triggers changes to the way in which the organisation is constituted such that it may survive.

Based on the research conducted at the seven interview companies and the case study on Lend Lease it is possible to put forward a more tightly defined proposal regarding the nature of insights that may emerge by viewing an organisation from an autopoietic perspective. These insights may be summarized into 3 key points;

1. The organisation and environment create a single unity, termed here the organisational unity, that is reconceptualized on an ongoing basis

2. The propagation of the reconceptualized organisational unity follows a developmental process involving gradual changes to the structure of the individuals who compose the organisation

3. Knowledge management currently represents the most complex process for the propagation of reconceptualizations on a global scale, however, it will eventually be succeeded by other more complex processes as competitive pressures require the process of reconceptualising to become faster.

Each of these points will now be discussed in more detail.

1. The Organisational Unity

Accepting that the organisation is an embodied aspect of an individual's worldview it is possible, and given the examples described in this thesis - necessary, that the environment and organisation are reconceptualized in an ongoing fashion. Up to this point in the thesis, the organisation and its environment have been distinguished as two separate notions. It will now be argued that this separation of the two entities is misleading, as it is not sustainable to conceptualize the organisation without reference to its environment.
Therefore the notion that an *organisation* may either enact or react to its environment could more accurately be described as the individual enacting or reacting to the reconceptualization of the *organisation* and environment as a unity, to borrow Maturana and Varela's term. The process of reconceptualizing the nature of the *organisational* unity, is critical to the survival of the *organisation* over time and is a common characteristic amongst the companies that were interviewed in this study, those that were included in research conducted by Arie de Geus, (1997) and in the work of Collins and Porras, (1994). This point can also be supported by a number of examples from the case study.

The research conducted at Lend Lease, showed that on a number of occasions, people within the company reconceptualized the structure, operation and form of the company. An obvious example from early in Lend Lease’s history was bringing control of the money, design and construction under one umbrella and therefore providing an integrated service that was not previously available in the Australian construction industry. This shift, involved a change of structure for the *organisation* as much as it effected the environment in which the company operated. In essence the *organisation* had to educate the construction market on the value of its new product, but in order to do this successfully it needed to change itself in terms of structure and operation. The reconceptualization was of one interaction between the *organisation* and its environment – not two separate entities.

Another example is the shift towards globalisation. The globalisation process involved a change of view from Lend Lease as an ‘Australian *organisation*’ to a ‘Global *organisation*’. In both of these conceptualizations of the company, it is interesting to note that the environment and the *organisation* are combined into a single term – ‘Australian *organisation*’ or ‘Global *organisation*’. Initially the new conceptualizations were very general and held by only a few of the senior people in the *organisation*. The actioning of these conceptualizations involved the gradual adoption of the conceptualizations by others within the company as a function of their own experiences.

The gradual adoption of a new *organisational* unity involves considerable changes to the structure of the physical and non-physical environments of the individuals within the *organisation*. During this second process, the distinction between the environment and the individual is significant. The physical environment of the individual, over time, triggers changes in the way that the individual constructs the non-physical environment and with that the *organisational* unity. It is these changes that are supported by the developmental processes or characteristics discussed in Chapter 2.
2. Developmental Characteristics

The reconceptualization process occurs at all levels of the organisation, however, in order that organisational members share similar concepts of what the organisation is, these concepts must be propagated throughout the organisation. Each of the stages or states, depicted in Figure 2.2 may be considered enabling states for the propagation of the new organisational unity. Based on the research described in this thesis, four enabling states have been identified.

The hypothesis regarding the developmental model shown in Figure 2.2 is that the states at the higher levels of the model are not possible without the organisation first establishing the states at the lower levels of the model. Each state, however, represents an incrementally more complex approach to the reconceptualising process. For this reason, knowledge management, as an enabler for propagating the reconceptualization of the organisational unity, represents the most complex approach as it involves each of the stages before it.

From the perspective of the individual, these developments are manifested through changes to both the physical and non-physical domains of their work environment. For example, changes to the pay structures, reporting lines and patterns of interaction, educational support and information technology. With each of these environmental changes, the mix of environmental triggers that the individual receives also change, perturbing (overtime) a reconceptualization of the organisation, as a function of the individual’s structural drift.

The need for continued organisational growth, combined with competitive pressure from other organisations has led many companies to grow their operations to cover a multiplicity of locations. The addition of new offices in a number of countries creates a situation where the propagation of reconceptualizations, is difficult. Based on the discussions of knowledge sharing in Chapter 5, the propagation of new organisational unities requires the creation of congruities of context with regard to how the organisation is conceptualized. When the organisation is in a number of locations around the world new approaches to the propagation of new conceptualizations are required.

3. The Need for Knowledge Management

Knowledge management represents the most complex of the developmental states discussed in this thesis. As already noted, it involves each of the states below it in the model plus the added complexity of sharing information and potentially knowledge on a global scale. Knowledge management does not represent a reconceptualization of the organisational unity itself, rather it may
be viewed as an enabling process for the propagation of conceptualizations from, for example, the
people setting strategy for the organisation, to those who are responsible for the implementation of
changes. The focus is in reducing the amount of time taken between the reconceptualization and the
actioning of that that has been conceptualized.

Arguably, the speed with which a new strategy, skill or capability can be implemented throughout an
organisation the greater the potential competitive advantage that may be gained. Consequently it
would make sense to suggest that, in time, another more complex propagation processes will emerge,
that like knowledge management, will involve each of the developmental stages below it, including
the management of knowledge.

The speed with which organisations have been propagating their reconceptualizations has arguably
been getting faster for some time as a function of competition and the need for flexibility. The
creation of a flexible industrial relations environment provides a base level from which the
propagation process can begin. It encourages employees to think about their role in the organisation
and with that, the nature of the organisation. Through restructuring the company toward a team-
based work organisation, the patterns of interaction between employees are changed, as are their
roles. Again the employee is being encouraged to think about the nature of their role in the company
and consequently their conceptualization of what the organisation is changes. The development of
the learning organisation notion, it could be argued, was recognition that the speed with which the
organisation was reconceptualized needed to increase in order to remain competitive. As such, each
succeeding stage in the model is indicative of an increase in speed regarding the way in which new
conceptualizations of the organisation unity are produced and propagated.

Summary

The three points discussed, although providing some closure to the discussions in this thesis are more
appropriately viewed as proposals for further research.

The autopoietic processes of change described in this thesis, remain consistent regardless of the issue
to which they are applied, however, they also carry the implication that one must walk before one
can run. Changes to each individual's context, or the way in which they relate to their environment
occur at different speeds and magnitudes, consequently it takes time for the whole organisation to
make the desired shifts.
In the following chapter, I will attempt to explicate a number of critiques that could be made against the research and address them before moving on to make my final conclusions regarding the nature of organisational survival, the learning organisation and knowledge management.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
Chapter 7

Critique

There are a number of conclusions and propositions that may be drawn from the research described in this thesis. Before these conclusions may be summarized, however, it is necessary to acknowledge and where possible address a number of critiques that could be made against them and the research. As such the purpose of this chapter is to discuss these critiques before summarizing the contribution of the work.

Critiques of the research described in this thesis may be directed towards two main dimensions;

- The application of autopoietic theory to organisations, and
- The methodology used to conduct the research

Within these two dimensions, a number of potential shortcomings may be observed and will be discussed in detail.

Part 1 - The Application of Autopoietic Theory to Organisations

In Chapter 3 of this thesis, an extensive examination was included of the debate regarding how, or whether autopoietic theory could be applied to the social domain. A number of issues were identified in this examination, that have to this point made a useful application of the theory difficult. These issues included;

1. ontological coherence, i.e. autopoiesis in its original conceptualization refers to the process of self-production in the physical domain, whilst organisations are arguably non-physical.
2. identifying the components of the system.
3. the usefulness of any application on a purely metaphoric basis.
4. Determinism versus voluntarism: This issue denotes a dichotomy between assumptions that emerge from an application of autopoietic theory. Following strict determinism it would be argued that changes to an autopoietic system cannot be facilitated. This position contradicts other voluntaristic ideas presented in the thesis regarding the ability to facilitate change.
The first two issues were dealt with in Chapter 3 in order to develop a weltanschauung based upon autopoietic concepts, as such the arguments relating to these critiques will not be repeated here. The third and fourth issues, relating to usefulness and the dichotomy between determinism and voluntarism were not dealt with and so will be discussed in some detail here.

**The Practical Value of Applying Autopoietic Theory to Organisations**

An assumption underpinning the work throughout the thesis has been that any application of autopoiesis to organisations should provide insights of practical value, beyond any theoretical outcomes. On a theoretical level, the application of the theory in this thesis, is an attempt to remain consistent with the theory, whilst addressing the observed ontological issues. In doing this, an epistemological paradox must be acknowledged in that by accepting objectivity-in-parentheses as an epistemological position, it is no longer possible to have a literal application of the theory to a subject. Any application of the theory is subject to the structure-determined constructions of the observer and therefore essentially metaphoric.

This point makes Mingers’ observation regarding the value of metaphoric applications of autopoietic theory somewhat problematic.

"In overall terms, using autopoiesis metaphorically is reasonably unproblematic – one does not have to agonize over the deep ontological problems. Equally, however, the results are merely metaphoric and have no greater claim on our attention"

(Mingers, 1995pp152)

Under what circumstances does a metaphoric application of the theory become useful or useless? The critiques Mingers’ (1995) provides of other authors who, in his words, “simply apply autopoiesis naively to the social domain” (p120), are well justified from a theoretical perspective. The practical value of these authors’ works is less clearly defined or critiqued. As discussed in Chapter 4, when describing the differences between knowledge and information, the notions of useful or valuable are not characteristics of a subject itself, rather these are value statements made by an observer regarding the subject. Therefore the usefulness of an application is observer dependent with the consequence that it is not possible to make a blanket statement regarding the useful or uselessness of an application of autopoiesis to the social domain.

This outcome remains consistent with the theory under study, and is potentially satisfying from a theoretical perspective, however, it sidesteps the issue that, I feel, Mingers’ was trying to point out.
The potential value that may be drawn from autopoietic theory is that it may describe the processes of change that occur in the social domain to explain why organisations appear to,

"Despite significant changes in their environment and tremendous internal structural changes of both members and relationships, ... have maintained a continual identity over long periods of time." (Mingers, 1995pp121)

To address this point it has been argued, in this thesis, that the problem lies not in applying autopoiesis to organisations but in the conceptualization of organisation that is held in the first place. The three main types of approaches to the application of autopoiesis in the social domain; termed here Sociological, Scientific and Metaphoric, all assume that the organisation, as an entity, exists outside the structure of the individual distinguishing it. This position was found, upon application of the original theory, to be inconsistent with the processes described by Maturana and Varela (1980) and the phenomenological dimensions of the theory. As is diagrammatically represented in Figure 3.2, to remain consistent with the theory, organisations should be reconceptualized as a function of the structures of the individuals said to compose them, existing in the non-physical environment of distinctions. Thus the organisation is an embodied aspect of the individual’s living process.

This reconceptualization has the implication that focusing on elements outside the structure of the individual may have misguided the focus for change agents with a view to assisting organisational survival. By approaching the issue from an autopoietic perspective, as developed here, the change strategy should consciously address both the physical and non-physical aspects of the individual’s environment. The examples of change initiatives discussed in Chapter 2 achieved this, even if this wasn’t the conscious strategy of the companies at the time. Arguably change strategies that fall short of the changes that had been hoped for, fail because the focus for change was not on the individual but on the organisation. In other words the strategy only focused on one element of the non-physical environment.

In terms of practical or useful implications, the above conceptualization suggests the following. By viewing organisations from an autopoietic perspective, the relationship between the individual and the organisation becomes much clearer. The relationship is embodied within the living process of the person and the way in which they relate to their environment. Over time a non-physical environment of distinctions is generated, within which the organisation exists. This is drawn from both the physical environment of the individual and other non-physical distinctions such as the economic system, market forces, and political environment for example.
Organisational change requires a reorientation within the individual’s non-physical environment of the way in which they relate to the organisation. This reorientation involves changes to numerous other elements of the individual’s physical and non-physical environment, including the remuneration system, legislation, technology and human interactions. The way in which the individual relates to the organisation cannot be separated from these other elements and as such for change to be successful, it should deal with as many of these elements as possible.

It is proposed that the fewer the number of elements of the individual’s environment that are changed, the less organisational change is likely to occur, and vice versa. If this is to be accepted, there are a number of implications that may be considered for change methodologies when a new management approach is being introduced. The example of the projects studied during the case study on Lend Lease is a case in point. The projects that only dealt with one element of the environment arguably had little effect on the way in which knowledge was shared throughout the organisation. Projects that have taken place subsequent to the case study, have reversed this trend however, with the result that if a further study was undertaken to include the more recent projects a different result may be found. This point will be discussed in more detail in the critique of the methodology.

The usefulness of autopoietic theory to organisational research and potentially organisational survival as they are conceived in this thesis, may be thought of in terms of Argyris’ (1992) ‘maps for action’.

> “These maps represent the behaviours that people use to design and implement their actions. These maps are the key to helping us understand and explain why human beings behave as they do, because they represent the problems or causal scripts that individuals use to inform their actions.” (Argyris, 1992 pp394)

Argyris suggests that if practitioners

> “...use maps for action to inform their actions, then one way for social scientists to help ensure that the knowledge they produce will be usable is to organise, or package, it in the form of maps for action.” (Argyris, 1992 pp394)

The developmental frameworks described in Chapters 2 and 6 are examples of maps for action. Although considerably different in format to those presented in Argyris’ book, they provide a basis from which action may be undertaken to effect change. As the maps are based upon the application
of autopoietic theory to a number of problematic contexts it can be argued that a useful application of the theory is possible.

**Determinism versus Voluntarism**

There is another serious critique that the above propositions regarding autopoietic theory raise. In essence, there is an assumption that by changing the environment of the individual, it is possible to change the individual’s behaviour and consequently achieve the desired organisational changes. It is important in making this assumption, not to fall into the same trap as Senge (1990). The trap, as identified by Jackson (1995) is to confuse the deterministic ideas of systems governed in particular ways, with voluntaristic ideas regarding the ability to change them.

In the case of autopoietic systems, the self-referring, structure-determined nature of the system means that what may constitute an environmental trigger for change, is defined by the system, not the environment. Hence it is not possible, as an external party, to change the system, as the system will change itself. It could be argued that this precludes the idea that other parties could facilitate changes to the system for the purposes of *organisational survival*.

I have, in many ways, approached the application of autopoietic theory to organisations from a deterministic standpoint i.e. autopoietic systems operate in a particular way. This has been necessary in order to understand the processes of change involved. There is, however, also a voluntaristic assumption inherent within the arguments presented in this thesis, that once these processes are understood it is possible to undertake activities to change the status quo. In order to address the criticism that arises from this situation, it is necessary to examine in more detail that which it is possible for the external party to change and that which can only be changed by the individual.

Changes to the structure of the nervous system of an individual occur in an ongoing structural drift (Maturana and Varela, 1980). Structural change is viewed here as analogous with behavioural change, as behaviour is an integral part of the living process. Environmental fluctuations act as perturbations to the system, that may or may not trigger a structural change. The form of environmental perturbation that may trigger a change, could potentially be anything, it is relative to the existing structure of the autopoietic system at the time. Having said this, within an *organisational setting* there are many congruencies in the structures of the individuals taking part. Arguably without these congruencies, it would not be possible to work together for reasons of coordination. For example most people within an organisation speak a similar language, without this basic starting point, the organisation’s functioning would be difficult.
The congruencies in structure between the people involved in the organisation, are the results of experiencing similar environmental perturbations over an extended period of time. Although these perturbations effect each individual differently, due to the plasticity of the nervous system, over time the nature of their ontogenic drifts develops congruities. These congruities may also be described as structural couplings. Consequently it is difficult to distinguish those elements of an individual’s behaviour that could be said to be a function of their environment and those that are a function of their individual structure – behaviour is a function of the two.

"...organism and environment enfold into each other and unfold from one another in the fundamental circularity that is life itself." (Varela et al, 1992 pp 217)

Accepting this, the environment is extremely important as a causal agent of behaviour. However, as argued previously in this thesis, the environment may be construed as being both physical and non-physical. The physical environment refers to physical objects. This does not assume that the individual has direct access to those objects, however, as

"...our cognition emerges from the background of a world that extends beyond us but that cannot be found apart from our embodiment." (Varela et al, 1992 pp 217)

The non-physical environment refers to objects that are distinguished in everyday life but do not exist in the physical sense, for example systems. Although arguably conceptualizations relating to the physical environment are triggered by environmental perturbations from those objects such as reflected light and sound etc, it is the process of distinction itself that triggers change to elements of the non-physical environment. This process takes place against the background of all the other distinctions the individual makes in order to orient themselves in the environment.

Speech, may involve a range of environmental perturbations, most obviously the sound of a person talking. The sounds are either congruent with those already distinguished by the individual, i.e. are within a consensual domain, or not. Other perturbations would include reflected light, which the cognitive system would reproduce as an image of the person speaking. These images may also fall inside or outside of a consensual domain. Environmental perturbations, like these may be thought of as information. The individual makes meaning out of this information through the structure of their nervous system, either triggering changes or dispersing without effect. Distinctions are made of the way in which the environment appears to be, which changes the relationships between previously held distinctions of the environment. The environment, therefore, is generated by and a generator of an individual’s structure and consequently their behaviour.
In an organisational setting, the range of environmental perturbations an individual may receive relative to the physical environment will be fairly similar to the next person. For example if everyone has their own office, with the blinds pulled down and the doors closed, the pattern of human interaction that people experience will be dramatically different to the pattern of human interaction people will experience in an open plan office. Emerging from the physical environment, people will generate a non-physical conceptualization of what the organisation is and the behaviour that is appropriate to it. This conceptualization will be either reinforced through continued environmental perturbations of the kind described by the 'closed office' example, or gradually changed if the ongoing sets of perturbations do not reinforce it.

As a consequence of this process, it is possible to conceptualize new environments that will offer new ranges of perturbation. Open plan offices, increase the level of communication between the people within them due to opening up the spaces between them. The reduction of dividing walls and visual barriers has the effect of increasing the number of environmental perturbations that usually occur from human interaction. Although it is not known prior to the installation of such offices what new work processes may occur, it is possible to say with some confidence that increased communication between people will be one of them.

It is relatively easy to discuss changes in environmental perturbations with regard to the physical environment, however, it is more difficult to discuss changes to the non-physical due to a marked increase in complexity that is associated with it. The increase in complexity arises from the more purposeful nature of the non-physical environment. As described above, the non-physical environment, although effected by the physical, is essentially internal to the structure of the individual. It also provides the ability to distinguish one's self from the environment in general. This is possible through the distinction of the I. The 'I' creates a number of problems in terms of the model proposed here, as where the 'I' starts and the environment stops is not objectively distinguishable.

Varela, Thompson and Rosch (1992), in their book *The Embodied Mind*, discuss the observation that people act and believe that there is a self upon which their experience of the world is grounded. Upon examination, however, they determine that it is not possible to distinguish the self (at least within an autopoietic epistemology). The issue that arises, from a Western cultural perspective, is that the obsession with distinguishing the self relative to others has led to what they term an economic view of mind.
"The goal of the self is assumed to be profit – getting the most at least cost....We believe that this implicit vision of motivation underlies not only social science but many contemporary people's views of their own action. Even altruism is defined in terms of an individual obtaining (psychological) utility from benefiting another" (Varela et al, 1992pp245-246)

Although such a position is far from ideal, it is arguably representative of a large proportion of Western and to an increasing extent Eastern communities. As a consequence the impact of the way in which self is conceptualized, on an individual’s motivation cannot be ignored in the processes of change being discussed here. The effect of remuneration, reward and recognition, promotion and social status on the way in which people work in organisations must be included in the way that the organisational unity is conceptualized. These things are all elements of the non-physical environment, yet are contingent on the structural coupling of organisational members in order to have any effect. As such because they primarily exist in language they can be manipulated, like physical objects, with the effect that over time new congruencies of structure with regard to the non-physical environment develop. As discussed these new congruencies are analogous with changed behaviours. Richard Baumbusch Executive director of US West Communications when asked about how his organisation made changes to manage knowledge more effectively, was quoted by Stewart (1995) as saying

"...the pivotal insight was finding a language that engages operations managers"

(Stewart,1995pp201)

In summary the issue relating to the perceived contradiction between determinism and voluntarism that could be drawn against this thesis, can be addressed. To assume that it is not possible to consciously change elements of the environment in order to effect the balance of perturbations to the system is to deny that the environment changes at all. Through the process of living the individual continuously changes the nature of the relationship between themselves and their environment. On the physical level there is considerable evidence that humans can consciously change their environment. Appendix 1 of this thesis, included examples where companies had also consciously changed the nature of their non-physical environment in order to achieve significant changes in behaviour and consequently the nature of their organisation.

What needs to be recognised is that the motivation for change is a quality of the individual, not the environment. Although the motivation to change can be encouraged through changes to the physical and non-physical environment, the desire to change is contingent on the individual. This has the implication that in many change initiatives, people will either change their behaviour as a function of their relationship with the new environment that has been created, or they will leave the
organisation. Very few will continue in the same way as they had done before. This position does not deny that instructive interactions are impossible, however, nor does it mean that changes are completely unpredictable.

Political Dimensions of Organisational Change

An often unspoken aspect of organisational change is the political dimension. Politics within organisations is generally perceived as an unpalatable subject, with power being seen as a ‘dirty word’ (Salancik & Pfeffer, 1991). Having said this, the political dimension of organisational change is extremely important and its omission from the discussions in the previous chapters of this thesis is grounds for critique.

The topics of power and politics within organisations constitute a whole thesis in themselves and so will only be discussed here in relation to autopoietic theory. Within autopoietic theory, the topic of power, receives relatively little discussion. The reason for this is that Maturana and Varela’s epistemology creates a situation where all forms of social arrangement are equally valid. Berman (1989) who argued that such a position makes it impossible to critique oppressive regimes or dictatorships critiqued this position. In his response, Maturana (1991) agreed with Berman, that from a biological perspective it is not possible to discriminate between different ‘manners of living’ as all are equally legitimate, however, that does not mean that all are equally desirable. It should also be noted that the desirability of these different manners of living cannot be assessed objectively, but it is the responsibility of the individual to choose what is appropriate.

Mingers (1995) suggests that Maturana’s response is too simple, particularly when considered in light of Habermas’ (1972) three cognitive interests of

- Control: of the physical world,
- Understanding: in the social and linguistic world, and
- Self-development and emancipation: in the personal world

The implication of these three interests is that it is not always possible to make free choices due to socially oppressive circumstances. The large amount of work undertaken on the notion of personal control (Greenberger et al, 1988) can also be included as relevant here.

“Although power and influence-the capacity of a person to influence others-overlap the concept of personal control, they also differ from it. An individual’s power can be evaluated by what target
individual’s say about a source’s power; power refers to some ability to exert an influence on other individuals. Personal control...is a subjective state, based on beliefs, personality, observations and biases that can only be assessed through self-reports and concerns influence over situations as well as over individuals” (Greenberger et al., 1988 pp406)

The personal control literature has some similarities to Maturana’s own conceptualization in the sense that power in its influential form is self-referential. Maturana argues that

“...power is a matter of obedience, and...nobody possesses power but is given it in the obedience of those who obey.” (Krull, Luhmann & Maturana, 1991 pp 95)

Strictly speaking, the above position is problematic, in the sense that whether someone obeys another or not, is a description by an observer and does not actually represent a state of the system. It will be argued below that the notions of power are inextricably linked to the notion of a consensual domain and can be best understood in terms of this concept. The main discussions of power with regard to autopoietic theory have emerged from debates on the application of the theory in family therapy. These debates have primarily related to power relationships that operate within the family. These discussions, however, are beyond the scope of this thesis.

These concerns led Mingers to question whether there are any

“... (non-biological) criteria for judging particular social arrangements, or is it purely a matter for the whim or self-interest of the individual? If it comes down to individual preference, then are such preferences purely accidental or are they ordered in some way? And if they are ordered, are they likely to be related to the society in which the person lives.” (Mingers, 1995 pp 212)

In terms of the discussions in this thesis, one area where power or control has been discussed with regard to autopoietic theory and social systems is the work of Peter Hejl (1989). Hejl notes that

“...a system confronted with a need to decide continuously between different and changing possibilities of action generated as a result of the dynamics of its components, is confronted with a regulation problem that cannot be solved through self-organisation. Such a system must develop possibilities to cope with its regulation problem or it will disintegrate.” (Hejl, 1989 pp 24-25)

The notion of hierarchical regulation is discussed as the main mechanism for dealing with this issue. With this comes the assumption that there is a decision center with ultimate knowledge and power over the system. This is of course an ideal rather than a practicable reality in organisations. Hejl recognises this and concludes that
"Self-regulation must be characterised in contradistinction to the law of requisite variety by processes through which less complex components or subsystems can regulate more complex components or subsystems" (Hejl, 1989, pp. 29)

In essence this means that control of the whole system is decentralised to a degree that the actions that are observed as being of the whole are regulated by the sub-systems and consequently emergent. Taking Lend Lease as an example, the regulation of the parts had historically been quite decentralised as noted in Chapter 5. This did not preclude decisions about the whole being made from a central position, but ultimate knowledge and control of the whole was decentered and spread across the parts. In Lend Lease this process had occurred to such a degree that the process of getting ‘buy-in’ to initiatives across the group had become difficult.

Hejl’s work focuses on the meta-level design of social systems, rather than the effects of power directly on the processes of change within an organisation. Work focusing on organisational change and survival from an autopoietic perspective was not found during the research. In terms of accounting for power relationships within the perspective developed in this thesis, Maturana and Varela’s (1980) notion of a consensual domain offers some explanatory value.

Within the framework developed in this thesis, a power relationship may be conceptualized as an element of the non-physical environment of the individual, manifested in the choice to obey that Maturana (1991) promotes. The ‘choice to obey’ occurs as a consequence of the processes of structural coupling and distinction making that go to make up the non-physical environment of the individual. It should also be noted that power needs to be conceptualized in this way to remain consistent with the discussions regarding determinism and voluntarism above. As discussed instructive interactions are not directly possible but require changes to the environment of the individual, that over time produce new structural couplings and congruencies with others in the organisation.

This is a particularly interesting area for further research on the application of autopoietic theory in the social domain. For example, the choice to obey can be linked to the process of self-production, as a means by which to remain structurally coupled to particular elements of the environment and consequently survive. This point is intimated by Hejl (1993) but not examined explicitly. To develop this research in detail is beyond the scope of this thesis, however, to remain consistent with the model being developed, research would logically focus on the notions described above.
The relationship between power and knowledge is also important to the issues under discussion in this thesis. This is primarily due to the widespread assumption that with knowledge comes power. This assumption leads people to the belief that they are best not to share their knowledge as by doing so they are giving away their power. Power in this case is viewed as the value that the *organisation* places on the individual.

The management theorists reviewed in Chapter 4 largely avoid the “knowledge is power” topic, as do Maturana and Varela. Sveiby (1997), however, makes the interesting observation that knowledge only grows in value through action, consequently the value of the individual’s knowledge is best grown through application and sharing.

In terms of the influential power that is associated with knowledge, the discussion relating to Maturana’s observation that power cannot be used on others (in the sense of instructive interaction), but given through the process of obeying remains the same as for the discussions of power above.

So far discussion of power in *organisations* has focused on the individual and the power they may exert or believe to be exerted. Another aspect of power in *organisations*, is the perceived power of the *organisation* itself. In terms of the framework developed in this thesis, the notion of organisational power is difficult to account for in terms of the frameworks developed by others (Clegg, 1993, Drucker, 1993). One of the keyways in which organisational power is described is in terms of surveillance.

> “Surveillance, whether personal, technical, bureaucratic or legal, is the central issue. Its types may range through forms of, for instance, supervision, routinization, formalization, mechanization and legislation, which seek to effect increasing control of employee’s behaviour, dispositions and embodiment, precisely because they are organisation members” (Clegg, 1993pp191)

These mechanisms are often taken for granted, however, and form the regulatory environment of the *organisation*. It is argued here, that mechanisms of what may be termed organisational power or agency, are analogous with the non-physical environment and consequently key to the success of change processes within the organisation. If the *organisation* does not have the ability or power to manage these processes, or to regulate as Hejl (1989) pointed out the *organisation* will collapse. Drucker also observes this point,

> “...still the organisation has social power-and must have social power-and a good deal of it. It needs power to make decisions about people- whom to hire, whom to fire, whom to promote. It needs power to establish the rules and the discipline needed to produce results- e.g. assignments of
jobs and tasks to individuals and the establishment of working hours. It needs power to decide which factories to build and where, and which to close. It needs power to set prices."

(Drucker, 1993, pp. 94)

As a characteristic of the non-physical environment, the process by which organisational power is exercised is the same as that for other changes of state or behaviour. Organisational power, like organisational learning and organisational knowledge can be conceptualized in this way; as a function of the observer centered epistemology of autopoietic theory. In terms of influence, Maturana’s arguments regarding the choice to obey are also relevant. The need for further research on the relationship between motivation, self-preservation, and the way in which these notions are manifested through structural coupling is once again highlighted by this point.

In summary, there are many perspectives on power that could be discussed here, however, due to the framework that is being used, explanations of the mechanisms by which they operate would be very similar to those already described. As noted the need for further research on the application of autopoietic theory to the way in which power operates in organisations and political systems in general, is needed in order to fully address this subject.

Part 2 - Critique of the Methodological Approach

The methodology employed for this research had both a number of shortcomings and presented a number of opportunities that are worth discussing. As described in Chapter 1, the methodology used in this research drew on the methodological work of Miles and Huberman (1984), and Strauss and Corbin (1990) but also on the action research field. As a function of these research backgrounds, the process was designed to provide a theoretical formulation regarding the topic of study - organisational survival – rather than to test previously developed models on the subject. Unlike pure grounded theory, however, there was an assumption from the beginning of the study that, potentially, there would be value in the use of autopoietic theory as a perspective from which to view the topic.

It has been widely acknowledged that new approaches to organisational research are required in order to provide more holistic analyses of organisational phenomenon. In the introduction to this thesis not only was the lack of research on approaches to the learning organisation noted but also the limitations of traditional social science research methods in terms of making sense of organisational issues like the learning organisation. The methodology used in this thesis was an attempt to address some of these research needs.
Given the radical constructivist perspective that had been adopted through the use of Maturana and Varela's autopoietic theory, qualitative research was considered the most appropriate approach. The collection of quantitative data to support the propositions that have been put forward would logically form part of any research that is to follow that described here. The use of quantitative data in follow-up research would address the first potential shortcoming of the methodology – the size of the sample.

The sample sizes for the two phases through which the research moved, were arguably two small to satisfactorily claim validity for the propositions put forward in this thesis. As noted in Chapter 1, the sampling size for the first phase of the research was only seven companies. These companies were sourced from a list of twenty that had been generated from literature on the topic of the learning organisation. The reasons why the sampling size was so small has already been discussed in Chapter 1, however, a key issue is that the companies that agreed to allow interviews were all largely successful in their change processes. Consequently the rigor of the propositions put forward in Chapter 2, particularly those relating to the 'Developmental Model' in Figure 2.2, could have been strengthened through the use of a control set of companies, i.e. another set of companies who had been unsuccessful in attempting to become a learning organisation.

Collins & Porras (1994) in their research on visionary companies noted this point,

"Suppose you study a group of successful companies and you find that they emphasize customer focus, or quality improvement, or empowerment; how do you know that you haven't merely discovered the management practice equivalent of having buildings? How do you know that you've discovered something that distinguishes the successful companies from the other companies? You don't know. You can't know-not unless you have a control set, a comparison group." (Collins and Porras, 1994 pp14)

This critique would be very valid if it were not for two points. The first point is that the primary focus of the interviews in Phase 1 was not to determine key characteristics of learning organisations, rather to determine the issues the companies had experienced in attempting to become one. The second was a problem of access. It is unlikely that had all the 20 companies who were approached regarding the research, allowed interviews to take place, that all 20 could have been categorized as successful, consequently a control group would have emerged.

A more serious critique could be brought against the case study, however. This critique comes in a number of forms that will each be discussed below. Again sampling is an issue for discussion. The propositions made with regard to knowledge management have been made based on the experience
of one company, therefore how applicable these propositions may be to other organisations can be brought into question. On this point, critique is justified. However, from the perspective of resources, to undertake two or more one-year case studies, involving daily contact with the context, as this case study did was simply not feasible. For research that is not bound by the time and resource limitations of a PhD, more than one case study would definitely be required.

Another issue was the timing of the case study. As more knowledge management related projects took place during 1998 than 1997, it could be argued that the timing of the case study was inappropriate for the stage of development that Lend Lease had reached. With regard to the knowledge management issue, a more revealing study could have taken place between January and December 1998 as opposed to 1997. It could be argued that to give a more representative picture of the way in which knowledge management was addressed would require a three-year case study. This would provide knowledge of the way in which the projects emerged, the opportunity to see them implemented and then initial evaluations of the impact that the changes had on the organisation. Again, however, this hypothesis is based on observation of only one company.

Actually conducting the case study presents a number of issues as well. Primary amongst these is the cooperation of the company on whom the case study is being conducted. Most parts of Lend Lease were extremely cooperative and helpful where they could be. However, participation in the projects was not always possible, or particularly useful in terms of the overall research. As a consequence considerable time can be spent taking part in meetings that in the end were of no value to the research. Nor are their guarantees that cooperation will be forthcoming. In the case of Lend Lease it was, at the time the case study began, difficult for CEO’s within the company to get cooperation between business units, let alone a student, consequently the research could have failed due to inability to access appropriate information. Just as easily, Lend Lease may have decided not to allow the case study to go ahead in the first place, with the result that other companies would have been approached and the focal issue potentially change to accommodate their interest. As such the methodology represented a high-risk strategy.

The approach, however, did provide an arguably more contextually appropriate approach to organisational research. The topic of knowledge management has progressively grown in popularity over the course of the research. This would suggest that the choice of focal issue was, at the least timely, thus validating the outcome of the first phase of the research in terms of determining an issue for study. In terms of exploring the issue of organisational survival, however, the focus of the case study can be viewed as a point of critique. The reason for this is that knowledge management as it was studied in this research related almost exclusively to knowledge within the organisation. There
was no real discussion of the issues external to the organisation. Although reference is made to the way in which Lend Lease had interacted with its environment historically, the case study failed to deal with these issues.

On reflection this narrowness of focus related to the confidentiality of certain parts of the organisation's strategy, hence the company's movement into new industries, decisions regarding potential acquisitions and longer-term strategy could not be assessed within the case study period and could only be known in hindsight. None the less, further research on the topic would need to deal with this dimension of the organisation's activities in far more detail.

Summary

The validity of the research methodology and resulting propositions regarding organisational survival logically requires further research in order to test the outcomes on a greater scale. Furthermore the perspectives of others that read this work will no doubt also reveal other shortcomings of the approach. From my perspective, however, the research presented in this thesis represents a first trial upon which further research projects will refine and improve. It is some of the areas in which improvements could be made that I have discussed above.
Conclusion

In this thesis I have attempted to bring together a number of different research areas and fields in order to provide a coherent perspective on the notion of organisational survival. The logic in undertaking this process, stems from Drucker's recognition that a shift is occurring in the way that knowledge is conceptualized, and with that shift, a movement away from capital towards knowledge as the primary means of wealth creation.

This shift, it is argued, will have a dramatic effect on the way in which business is done and consequently the processes by which an organisation survives over time. In order to explore these ideas further, I reviewed the attempts of seven organisations, which claimed to have explored the idea of becoming a learning organisation. It was assumed that the development of the learning organisation notion, was a function of the shift towards Drucker's post-capitalist society.

In examining organisational survival as a field of study, it became clear that if the research was to have a potentially useful outcome any conclusions that were drawn would need to cover the following aspects:

1. The development of a conceptually coherent "frame" through which to discuss what an organisation was;
2. An understanding of the processes that produce an organisation, as it is conceptualized within the research;
3. How the processes of organisational production are manifested in organisational contexts;
4. How the processes of organisational production may be developed in an organisation so as to improve the ability of the organisation to continue or survive.

Research may be found that covers each of the points above but not all of them within a single study. Consequently it was possible to gain an understanding of how different aspects of organisational change and survival have been viewed in the past but difficult to produce an overarching framework that covered all of the points above. The reason for this difficulty stems from the inconsistency of assumptions used for other research on organisational change. Only rarely are the epistemological and ontological assumptions of organisational researchers made clear and when they are the work is focused more on philosophy than the development of useful heuristic frameworks.
The contribution of this research has been that it provides a first step towards the development of a framework that includes within its breadth a clear position on the nature of organisations, the processes by which they are produced and how these processes would appear to be manifested in organisational contexts.

This first step is significant because it lays an epistemological and ontological basis from which further research may build. The goal of course is to produce more practical implications based upon this foundation that may then lead to useful frameworks for change within organisations. This thesis stops short of providing these practical frameworks and logically the establishment of such frameworks could form the basis of other PhD studies.

I also suggest this work is a first step as there is a considerable amount of research that remains to be done to confirm the ideas proposed in this thesis. The “frame” proposed in Chapter 3 drew on the autopoietic theory of Maturana and Varela (1980), to provide an epistemological and ontological starting point. This resulted in the proposal that organisations are an embodied aspect of each individual’s worldview and not an external entity to the individual. This seemingly paradoxical position was premised on the notion that organisations are an element of the non-physical environment of the individual, perturbing the individual through the ongoing process of internal correlations in their nervous system.

Again, this dimension of the thesis represented a first step in a new approach to the application of autopoietic theory within the organisational context. A broad brush approach to autopoietic theory was adopted in this study, with the result that the formal aspects of the theory, drawn from Maturana and Varela’s (1980) original work provided the basis for the phenomenological implications that are of value in understanding the nature of an organisation. However, accepting that the phenomenological dimensions necessarily extend from the formal, any practical outcomes in terms of improved change management processes will be based around the formal biological change processes described within the original theory.

More study is required that is focused upon the application of these formal change processes which will provide the depth that was not possible in this study. This study has provide clarity on the direction for further research through the establishment of an epistemological and ontological foundation for further study, and the observation of key areas into which these study could focus.

The ‘ideas’ (Vickers, 1983) provided by an examination of autopoietic theory were interpreted in terms of the ‘events’ observed in seven companies and over a 1 year case study of Lend Lease
Corporation. What emerged from the observations of the companies were a number of organisational states that the companies appeared to develop through. It was proposed that these states were manifestations of the need by organisations to continuously reconceptualize the nature of, that which I termed, the organisational unity. The organisational unity is a single notion that encapsulates both the organisation and the environment as a single concept. It was proposed, following the case study that the process by which the organisation survived involved the organisation and its environment being reconceptualized on an ongoing basis. Furthermore the organisation and environment were reconceptualized as a single entity or concept rather than two separate notions.

The organisational unity that is produced is relative to each individual in the organisation, and as a consequence must be shared in order for a general consensus, regarding the nature of the organisation, to be maintained. It was proposed, the developmental states described in Figure 2.2, were enabling states that supported the propagation of new conceptualizations to other organisational members. This does not mean that they represent the propagation process themselves, rather that they support physical environments and overtime non-physical environments of interaction for the individual. It was proposed that through constant triggering of environmental perturbations individuals develop ‘congruities of context’ and that these congruities are analogous to the sharing of knowledge and the propagation of new organisational unities.

It was also proposed that the enabling states for the propagation of concepts are growing incrementally more complex than the states before them. As such, the state of Knowledge Management involves the states of ‘Flexible Industrial Relations’, ‘Restructuring’ and ‘Learning’ within its scope.
Figure 8.1 Nested Hierarchy of Enabling States

Each state represents a development over the one before it. It was proposed that the reason for these developments relates to both the increased complexity of modern organisations and pressure from competition. It was argued that the ability to reconceptualize the organisation is progressively becoming more difficult as large organisations, attempt to act as 'one' across multiple geographic locations. Consequently the processes of propagation are becoming more complex in order to deal with the added complexity that globalization brings.

Increased competition has the effect that the speed with which the organisation needs to be reconceptualized is also increasing, therefore the development of new conceptualization processes, that reduce the time taken for a concept to propagate around an organisation, provides one potential source of competitive advantage. These points carry the implication that knowledge management will be succeeded by yet more complex enabling states for concept propagation. These states like those before them will involve within their scope all of the other states.

It is not possible, however, for organisations to go on forever, growing faster in the process of reconceptualization and propagation of those concepts. Logically there is a practical limit reached where what we identify today as an organisation becomes no longer recognizable without considerable modification of the notion. Hints at this shift are already evident in the form of Joint
Ventures and Alliance relationships – what is inside the organisation and what is out is difficult to identify. Drucker’s arguments regarding a shift away from capital as the primary means of wealth creation towards knowledge coincide with a shift in the way that society conceptualizes its organisations. The proliferation of partnerships, in numerable forms, could be one of the first tangible manifestations of this process.

Before dealing with the future, however, there remains a need to understand the present and the past. The enabling states as outlined above provide both the direction in which I would like to pursue further research and the potential to provide the practical frameworks for change I firmly believe may now be developed. As discussed above the formal dimensions of autopoietic theory will be central to this pursuit but attention needs to be focused on the actual detail process of change. Logically work should begin with the notion of a flexible industrial relations environment and how through its manipulation over time changes to the way in which individuals perceive the organisation take place.

This thesis served only to scratch the surface on the nature of a flexible industrial relations environment and what that means for organisations. What is required is a more scientific study covering a larger number of organisations, approximately 20, from perhaps 4 or 5 different industries. The study would need to be longitudinal in order to take into account the ontogenic influences on the organisation’s existing states and changes to their states over time. As noted in Chapter 7, case studies covering approximately 3 years would be the ideal (assuming that most organisational change processes take a three year cycle to complete). The focus of these studies would be to attempt to correlate particular phenomenological dimensions of organisational life with the formal dimensions of Maturana and Varela’s cognitive theories. For example, the remuneration systems and what they reward were considered key to motivating people in line with the direction of the organisation, but as discussed in Chapter 6 not everyone responds to this particular stimuli. No evidence was collected in this study to directly link this particular element of an individual’s worldview to what motivates them to work and although anecdotally and from other research studies into employee motivation there would appear to be a link – the nature of the link is unclear.

Quantitative research techniques would add considerable weight to this proposed study when used in combination with semi-structured interviews. Like the study described in this thesis, I would suggest the use of semi-structured interviews as the first step. The interviews providing the researcher with an overview of the context, the issues experienced and the techniques being used by the companies would give the basis for the development of a questionnaire that could be quantitatively analyzed. The value of the quantitative research would be to provide the researcher with a greater measure of
the validity of any conclusions that they draw. I would not expect the process to yield any great insights that the semi-structured interviews had not produced, however, the richness of information drawn from the interviews is very difficult to replicate in the questionnaire. The questionnaire would provide the researcher with an understanding of the unanswered aspects of the research, areas where further work was required. I would expect that as the study was longitudinal it could be set up to be an interactive process moving between the qualitative and quantitative data collection methods.

There are of course a multitude of other elements in the industrial relations environment that would also affect an individuals perception of the organisation like work hours, promotions, office environment, union relationships, level of education, holidays etc. The list is almost endless, but logically not all the elements carry the same impact – perhaps there is an optimal set of enablers or levers within the industrial relations environment that assist in facilitating ongoing change in an organisation? Study of the other three enabling states described in this thesis should be undertaken differently.

The danger, if one were to continue research in vein described above is that focus could easily be lost on the nested nature of the enabling states as described in this thesis. A flexible industrial relations environment is only the first enabling state, the states of Restructuring, Learning and Knowledge Management are all inextricably related. As such I am not convinced that the most appropriate path to the development of practical frameworks is through dissecting each state and then trying to put them together.

It was argued throughout this thesis that each enabling state built upon the one that preceded it and that if an organisational change practitioner were to attempt to implement changes at the higher levels of the model without having dealt with the lower levels, it was likely that the sustainability of the change could falter.

In terms of gaining a clearer understanding of the proposed enabling states, research needs to be conducted across a broad spectrum of companies with regard to the way in which they are reconceptualized. Only commercial organisations were studied in this research, consequently if the proposals put forward regarding the nature of an organisation and its environment are to have some validity, they should be tested in a broader spectrum of organisational types. For example, non-profit organisations, Government organisations, and other social groups should also be examined in terms of these proposals. Logically, the enabling states for other forms of organisation may not be the same as those found in the sample used for this research. Consequently, the development of a
framework for organisational survival that spreads across all forms of social organisation is a long way away and may not be possible.

In essence the ideas that have been proposed in this thesis, need to be tested and further developed before one could claim that they

"...correspond with reality sufficiently [enough] to guide action." (Vickers, 1983pp55)

The research has provided a number of questions for further study, that are more tightly defined in scope and that may, if studied, provide useful outcomes for practitioners in a range of organisational roles.

The need for new approaches to sustainable organisational development cannot be usefully addressed through a single study. The use of autopoietic theory in the social domain has been and could be approached from a number of perspectives. The challenge is to ensure the consistency of the frameworks and the usefulness of any theoretical propositions that emerge. This challenge will not be easy, however, the complexity of the theory and the dynamics of the context guarantee this point.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
Appendix 1 – Phase 1 Research Findings

Ford Australia

The decision that Ford Australia would attempt to become a learning organisation was taken in the late 1980s with the initial changes occurring in the early 1990s. The decision came partly in response to the Federal Government’s Work Reform Agenda, but more overtly the Federal Government’s vision for the Australian Car Industry, that later became known as ‘the Button Plan’ after the Industry and Commerce Minister of the day.

‘The Button Plan’, foreshadowed in the late 1980s, involved a dramatic reduction in tariff protection for the domestic car industry and consequently the need for domestic car manufacturers to produce cars that could compete with imported products from overseas, which were perceived to be of superior quality. The plan involved a reduction in

“...tariff protection from 50% in 1989 down to 15% by the year 2000. In light of that proposal our industry was clearly not competitive on an international scale and we had to understand why, and what the hell we needed to do to address this plan otherwise we’re going to go out of business.”(Ford 3, 7/10/1996)

The Government funded a tripartite tour of successful car manufacturers overseas. The tour included Government representatives, representatives of the car companies (Ford, GMH, Mitsubishi, Nissan and Toyota), and union representatives. According to the people interviewed this ‘best practice’ tour provided an initial impetus for radical change, with the observation that

“...if we want to be world competitive we’ve got to get our people, in terms of technology and capability, up to a standard where they are ready to compete.”(Ford 1, 7/10/1996)

During the 1980s Ford Australia had trialled a number of programs that according to one interviewee were “...merely add-ons with fancy titles”(Ford 1, 7/10/1996). In 1991, the decision was taken to bring education, training and development to the core of the business.

“We realized that we needed to focus on our key resource. That really all the spending in the world on technology wasn’t going to bring us the end result that we wanted: That our key resource was our people. The severe restructuring – right sizing - that occurred in 1991/92, was a significant challenge for us to refocus the energies of our people, to move beyond the crisis mentality toward a forward looking, more strategic confident business, that was meeting
customers expectations producing a high quality, good value for money product.” (Ford 1, 7/10/96)

The decision to move to a team-based work structure was also directly attributed to the best practice tour:

“...best-in-class manufacturers were devolving authority down to work groups to run the business essentially and taking out the traditional supervisory based hierarchical structures and gave people more autonomy to run the business at the lower levels.” (Ford 1, 7/10/96)

This led to a series of industrial agreements, where the Vehicle Industry Certificate (VIC) and Post-Trades structure were put in place. These agreements were followed with further training and education initiatives designed specifically to assist Ford move towards a team-based culture. The establishment of the VIC, as the base line for the motor industry’s reward structures, was considered the focal point of the early changes. The VIC was

“...built around getting away from having our production employees paid according to:
1. the job they did, and
2. how long they’ve been there...
...because that makes for a very inflexible workforce. [Moving to a workforce]...where they’re paid for the knowledge and skills they bring to the job regardless of the job they do. By paying the individual, rather than paying the individual for the job they did, flexed up our whole workforce.”(Ford 1, 7/10/1996)

Although originally initiated by Ford Australia as part of the Federal Government’s Work Reform Agenda, other car manufacturers also adopted the VIC. This lead to the establishment of a training board structure that allowed all the manufacturers, who had manufacturing plants in Australia, General Motors, Nissan, Toyota and Mitsubishi, to support the VIC as a nationally accredited qualification. The certificate was constructed in two main parts
• skills, and
• knowledge

Skills are now learned on the job and involve a formalised process of job rotation that provides employees with skills and experience on a number of elements of the production process. Knowledge is learnt in the classroom, outside work hours, with the cost borne 50/50 by the company and the individual.

“There’s an interface between on job and off job.... so that the knowledge side of it complements the on job skills acquisition and they [the employees] move through a number of pay points and as
they move through they get pay increases and at the third level they get their VIC which is nominally 400 hours of training" (Ford 2, 7/10/1996)

The adoption of the VIC helped to raise the general level of skills amongst Ford employees. Employees were now encouraged to develop skills relating, for example, to effectively working in teams, i.e. how to conduct meetings, communication skills, working in groups and leadership. Education units were initially developed ‘on the run’ during the implementation of the structural changes and were matched to the trade structure. Employees now had to develop knowledge and skills to progress up the structure.

“The way that we were developing the system was, we were saying your career is your own responsibility you have to map it out and undertake the training and we will do everything to assist you and provide those resources.” (Ford 3, 7/10/1996)

Union involvement continued from the initial overseas tour through to the establishment of the training board structure or the Industry Training Authority Board (ITAB), which covered a range of trades. Without the cooperation and involvement of the unions in the process, it was considered unlikely the process would have been successfully established.

A small number of educational consultants were also involved in the change process, to provide guidance on the development of curriculums for the training and education units. Consultants, however, were not involved in the process beyond that capacity.

“Resources were allocated across the whole organisation and each area piloted gradually. For example we took Plant 2, where at that time we were building the Capri, we only had about 300-400 employees.... and we would start initially by identifying one group, training, then selecting leaders, preparing them for their roles and responsibilities and then giving them a charter to operate with, monitoring that, finessing it, and then extending that pilot until it had gone throughout the plant. From the learning here, we go to another plant.”(Ford 3, 7/10/1996)

The restructuring process placed responsibility back on the individual who did the job. The combination of education and training, and restructuring of the work process led to a situation where the

“The work groups own their process, they own their jobs, they chart waste reduction, industry indexes, first time capability, absenteeism scores, to make sure that their section of the business is delivering on the total business.”(Ford 1, 7/10/1996)
Benefits Experienced

In quantitative terms, the combination of restructuring and improved technology resulted in a 48% increase in productivity since 1990\(^{15}\). Interview participants also identified a number of more qualitative benefits. One participant was very clear in his response, suggesting that the primary benefit was the organisation’s increased ability to change and adapt.

"We’re not a monolithic slow moving inflexible workforce anymore, we’re very lean and change is seen as a normal part of how we do business and we manage the change process, so flexibility, adaptability and willingness to change are critical things." (Ford 1, 7/10/1996)

His second observation was in terms of the organisational culture

"The organisational culture is now inclusive. It values the input of all employees regardless of what their status is in the organisation. That might sound a bit mother-hoodish or sounds a bit too good to be true and when its put like that it probably is, but that is the philosophy behind what we believe is going to move the business forward. You have to tap the resources you’ve got, and our biggest resource and our biggest resource expenditure is people. So if we are not giving people the opportunity to participate in the business then we’re not very good business people" (Ford1, 7/10/1996)

The third benefit he identified was a change in the organisation’s perception of training and education. Traditionally education and training had been viewed as an “add on” to the regular Human Resource functions. However, with the changes

"...the education, training and the development of people is not seen as something off to the side. Education and training is seen as part of the core business. You don’t have to be a part of HR to be involved in training and education.....If you are reorganising there is now a natural logic that says do our people have the capability? How can we work with Human Resources, Education and Training to make this work"(Ford1, 7/10/1996)

Other benefits that were identified included the inclusion of suggestions from the work teams on aspects of how new model vehicles could be better designed. This has resulted in 57% of the ideas generated from the factory floor being integrated into the design of the new model Falcon (Ford 3, 7/10/1996), which was released in late 1998.

\(^{15}\)It should be noted that these figures were provided by interview participants based on Ford’s own measurements and not independent analysts.
Issues Experienced

There were a number of issues identified by the interviewees. The issues identified did not relate, however, to problems that had been encountered during the change process, but to the future of the organisation. There was a perceived need to take stock of where the training and education programs, that supported the organisational change, had come to. The speed at which the programs were developed and put in place, meant that the organisational focus had been on ‘doing it’ perhaps to the detriment of a more strategic framework. As a result there was, at the time of the interviews, a large framework of programs that, in the view of at least one participant, was not as logical as it could have been. Another participant described the framework in more detail;

"On top of...[the VIC] there’s the apprenticeship program...and then there’s a range of advanced certificates under the new Australian Qualifications framework. There’s one for our product development group. Then there’s the post-trades progression model which suits our fitters, toolmakers, mechanics etc. Then there’s the Ford Studies Program, which is our own enterprise specific program accredited within TAFE and the University sector and that has competencies which are consistent with frontline managers initiative. Running beside it is the Foundation Studies, or University Certificate and it’s got computing, introduction to technology, introduction to management, improving product quality and job organisation."

(Ford 2, 7/10/1996)

Significant links had been forged with a number of Universities during the development of Ford Australia’s education and training programs. The company now also offers Diploma through to Masters of Engineering degrees on site. These programs exist on top of the framework described above. The breadth of educational programs therefore, ranged from very basic trade skilling through to postgraduate qualifications, consequently the development of a logical framework that remained coherent with the industrial relations agreements and business processes presented a significant challenge.

In response to this observation, 1996-97 would involve extensive business process documentation and reengineering. Once this was completed the suite of programs offered would be evaluated for their effectiveness. This included evaluating whether the programs met the business needs and the strategic direction of the organisation. This process could result in the removal or reworking of some of the older programs to bring them into line.

A second issue related to the external organisations with which Ford had strong relationships. There was a perception that some of the union representatives didn’t share the strategic view of the
organisation and as a consequence there was some frustration at the speed that reforms could be introduced. Largely these frustrations related to differences in purpose. Some of the union representatives were still strongly driven by the bottom line and the pay packet of the employees. Consequently the people interviewed considered there was an ongoing need to educate these people as to the big picture issues that the organisation and industry were facing.

The demarcated industrial relations environment, in which the organisational changes began to take place, effected the way in which the educational framework initially developed at Ford. In the words of interview participants, the different trade certificates have emerged in silos or chimneys to reflect the industrial relations environment they were created in.

"...we’ve set up our training structures around industrial paradigms and we need to dismantle those industrial paradigms and merge the chimneys."(Ford 2, 7/10/1996)

As a result of the above, demarcations between the semi-skilled and skilled labour force, and the blue collar and white collar employees still exist. These demarcations will become the focus of further change initiatives in the future. The Ford Studies Program was considered significant in the educational framework because of the demarcation issue. It was in this program that employees on salary and those on payroll came together and therefore it represented one of the few places where the demarcations had already been reduced.

A third issue that was pointed out was the significant cost involved in terms of maintaining the change process. There were several factors that contributed to this point. An important determinant was that the industry training and reform structures were highly bureaucratic and as a result Ford had people employed full-time just to write submissions to Government in order to gain course accreditation, and clearance for different change initiatives.

"There are too many hurdles, in terms of getting programs accredited....it’s in our own interest to have the programs of high standard, if we were able to accredit them ourselves it would save a lot of time and effort and streamline the whole process."(Ford1, 7/10/1996)

Another challenge for Ford Australia exists in the planned globalisation of the organisations through an initiative called Ford 2000. The goal of this initiative is the movement of Ford Motor Company from a multi-national organisation with operations in over 150 countries, operating for all intents and purposes as independent entities, to a global organisation where the different parts of the organisation operate as a coordinated whole.
Traditionally, Ford Australia was run as a stand-alone business in the Asia/Pacific region. This region had its own vehicle lines, independent of the other regions in which Ford Motor Company operated. As a function of this independence the Australian operations had already begun to examine the notion of a learning organisation prior to the development of the Ford 2000 vision. All the people interviewed at Ford noted that whenever top-ranking executives from the US visited, the executives were surprised at the low cost of the Australian operations, given the volume of cars produced. This doesn’t necessarily mean that Ford Australia has a secure future, however. As one interviewee observed,

“We’re over capacity on a worldwide scale, that means we’ve got more assembly plants that can produce more vehicles than the total worldwide demand, but already they’re building more assembly plants in Thailand, Taiwan, Vietnam, China, Indonesia. So whilst we’re looking OK at the moment in 6–7 years time when those plants are up and running and producing high quality vehicles, I’m presuming their cost of labour will be a lot lower and tariff protection rules will be in favor of them a lot more than us...what happens?”(Ford 3, 7/10/1996)

**Ford – Conclusions**

In terms of understanding the notion of the learning organisation, the interviews undertaken at Ford raise a number of points for consideration. Firstly, there was a consistent confusion of language as to whether the change processes that were put in place at Ford, changed the people, changed the organisation, or changed both. At different times but in response to the same question or in regard to the same subject matter, respondents discussed how ‘the organisation needed to change’ and how ‘we needed to change’. The company was also described in the following way

“...we, as an organisation...”(Ford 3,7/10/96)

There would appear, however, to be relative consensus, in the responses of those interviewed that the organisation did exist and was a changeable entity.

**Hewlett Packard (Aust)**

The interviews conducted at Hewlett Packard (HP), in contrast to Ford Australia, did not reveal a strategic decision, at a particular point in time, to change to become a ‘learning organisation’. Rather, the principles of the company founders, Bill Hewlett and David Packard, according to those
interviewed, created a very strong learning culture. Many of the characteristics of what might be termed a learning organisation appear to have already existed within the organisation.

The first point discussed by all three interview participants was the existence at HP of a clear set of values and objectives, that were regularly reinforced.

"...because there is this culture of developing and learning more, it's not something that we say we're striving to become a learning organisation...it's been the whole way throughout the company and its just the way it is...."(HP 2, 4/10/1996)

Learning is built into normal business processes through continuous appraisals and evaluations. One interviewee described the process as follows.

"When you first start with the company......after the first 6 months......you get a formal performance evaluation written on you and then six months after that you get another performance evaluation written on you and then every twelve months after that, on your anniversary date, you get another performance evaluation written on you and part of that performance evaluation is talking about what have you done and the way in which you've gone about doing it and attached to that is a development plan of what you're actually going to do to develop yourself into the future. So we've picked some competencies........ that in Australia we think are quite key to peoples success. There's 4 key competencies which are teamwork, customer quality, initiative and flexibility, and then you have 16 behavioral competencies or performance competencies and........we may select 2 for your particular job or 3 or 4 or 5 and so each individual will have, depending upon the job, different competencies. At your performance evaluation you are measured against your development in those competencies"(HP 2, 4/10/1996)

The evaluation process is linked directly to the individual's job, as is their progression throughout the organisation. Pay is tied directly to performance, which is made up of two main components

- development in the competencies, and
- results.

"It's not paid because your going to perform, its because you have performed. So normally your given a job, expectations are quite high of you and that pay might be quite high, but you don't get paid that amount until after you've proven that you can perform at that level. It's a little bit different to other companies where you get a job and you get a pay rise straight away."

(HP 2, 4/10/1996)

An individual's remuneration is not tied directly to their job role in the organisation, but more to the value they have added to themselves and as a consequence the organisation. This all relates back to
the first corporate objective – ‘make a profit’. The effect of this was described in numerous ways during the interviews.

“If you don’t make a profit they will shut you down pretty quickly” (HP 1, 4/10/1996)

“If we don’t make a profit, we won’t exist”(HP 2, 4/10/1996)

“Historically HP has funded all of its research from its profits, so it has never borrowed any money. Today that has changed and it will borrow a little, but mostly research is still funded by profits and therefore profit is the No 1 objective.”(HP 2, 4/10/1996)

“It is impossible to operate a business for long unless it generates a profit, and so if a company is to meet any of its other objectives, it must make a profit”(Packard,1995pp83)

The other corporate objectives are as follows:

“Customers: To provide products and services of the highest quality and the greatest possible value to our customers thereby gaining and holding their respect and loyalty.

Fields of Interest: To participate in those fields of interest that build upon our technology and customer base, that offer opportunities for continuing growth, and that enable us to make a needed and profitable contribution.

Growth: To let our growth be limited only by our profits and our ability to develop and produce innovative products that satisfy real customer needs.

Our People: To help HP people share in the company’s success which they make possible; to provide employment security based on performance; to ensure them a safe and pleasant work environment; to recognize their individual achievements; to value their diversity; and to help them gain a sense of satisfaction and accomplishment from their work.

Management: To foster initiative and creativity by allowing the individual great freedom of action in attaining well-defined objectives.

Citizenship: To honour our obligations to society by being an economic intellectual and social asset to each nation and each community in which we operate.” (Hewlett-Packard,1989)

The way in which HP people should achieve these objectives is also set out clearly in the corporate or ‘organisational values’:

“We have trust and respect for individuals
We focus on a high level of achievement and contribution
We conduct our business with uncompromising integrity
We achieve our common objectives through teamwork
We encourage flexibility and innovation”(Hewlett-Packard, 1989)
The values and objectives described above are not, in themselves, what distinguishes Hewlett-Packard from other organisations. Many companies have a mission statement and organisational values in some form. What is significant about Hewlett-Packard's values and objectives is the degree to which they are an integral aspect of the way that the company appears to operate. The people interviewed knew them intimately and spoke passionately about them. They provided a point of commonality amongst all employees regardless of their job or location. Obviously there are variations across the globe in the details, but it was made clear that they were fairly consistent around the world.

"Everyone in the group wears a badge like this [points to a name badge on his chest] and so everyone knows everyone else by their first names. No one has an office anywhere in the world, the idea being that managers sit with their people. There are minor differences around the world but every work area feels like an HP work area"(HP 2, 4/10/1996)

**Issues Experienced**

Due to the highly decentralized nature of Hewlett Packard, the responses regarding issues experienced with the notion of the learning organisation were answered more in the context of the roles that the people interviewed held than the big picture of the organisation. The issues identified included:

- the provision of consistent information for managers, in order that managers could all provide a consistent message to customers
- improved orientation processes to help new people come into the HP culture

"A lot of people struggle when they come to HP, because nobody is on your back to tell you what to do. Here there is respect for the individual so long as you get results"(HP 1, 4/10/1996)

- the provision of more flexible learning opportunities that would allow people to structure their learning around both their job and lifestyle in order to making it easier for the individual and more efficient for the organisation as a whole
- clearer documentation of work processes

These issues may be replicated across the organisation in the different divisions and business units, however, a different sample of interviewees may have produced a markedly different set of issues due to differences in operating environment.
Benefits Experienced

The benefits identified by the people interviewed related more to intangible aspects of organisational life than hard production figures or efficiency improvements. As HP has never really experienced a crisis in the form described by Ford, the benefits didn’t relate to profit growth since 1990 or reduced inventories or any of the other more traditional measures placed on the success or failure of a change initiative. Put simply the people interviewed enjoyed working there and felt that Hewlett-Packard would continue to be a successful company that was a good place to work. Again the values upon which everything is based were what the interviewees identified with and believed in;

"It's all about trust and respect for the individual...that is what the company is built upon"(HP 2, 4/10/1996)

"The HP way encourages risk taking, it encourages you to go out and have a go."(HP 1, 4/10/1996)

"I've had 5...6 jobs [within HP] in the past 7 years"(HP 2, 4/10/1996)

The interviewees considered that the work environment created at HP offered people more opportunity to reach their potential than at other companies. Furthermore, one participant suggested that sometimes it was good to speak to people in other companies to keep perspective on how good things were when you worked for HP.

Hewlett-Packards – Conclusions

It was difficult to discern a clear picture of Hewlett-Packard beyond the values of the organisation. It may be that the sample of people interviewed gave a very operationally focused view of the company, and for this reason didn’t deal with the more strategic issues involved in the learning organisation.

Two points were raised in the HP interviews that I feel are worth further consideration. Firstly, changes in Hewlett-Packard take place incrementally and therefore it is much more difficult to distill their individual effect. The people interviewed had not experienced the organisation operating in another way and as such there were no comparisons to be made between the past and the present in the way they were at Ford.
The second point was that the interview participants considered the notion of culture within HP to be particularly important in terms of understanding the organisation. There was a noted connection between the notion of culture and the behaviour that was considered appropriate to the organisation.

Like the people interviewed at Ford, there was a general consensus that 'the organisation' existed in some form. Whether the organisation existed as a separate entity to the people participating in it remained a confused issue.

**College Printing and Design**

College Printing & Design (CPD) provided printing and desktop publishing services principally for Box Hill Technical and Further Education (TAFE), in Melbourne, but also for clientele external to the TAFE. In contrast to the large organisations described so far, CPD employed only sixteen people at the time of the interviews.

The organisation had recently (in the past 14 months) undergone a change of general manager (GM) and with this, a major change in the way that it operated. The current GM suggested that when he was interviewed for the position, a key competency that the employers were looking for was his ability to develop the organisation's ability to manage customers and teams. As an autonomous unit of a host organisation, Box Hill TAFE, there were several constraints influencing the way in which CPD operated.

"we are inextricably linked to the host organisation, all we could effect directly was our own organisation in terms of changes that were going to be planned and made. In terms of financial constraints we are locked into the host organisation’s purchasing policy, we are locked into the HR and legal implications of equal opportunity and employee relations we can’t stand alone on these.”(CPD 1,3/10/1996)

In other areas CPD did have autonomy. These included restructuring the printing department, position descriptions, production processes, marketing, and staff selection. As a consequence it was in these areas that most change occurred. Initially CPD had a number of problems that needed to be dealt with, including financial, staffing and public relations due to a poor reputation with clients. The company already had quality assurance accreditation.

The first stage of the change process was an information gathering exercise that included interviews with customers and staff. This provided a fuller understanding of the expectations of customers, stock levels, cash flows etc. The GM then looked for a change that could be made quickly that
would have a positive effect upon staff and the greater environment of the TAFE. This first project related to management of the stock levels. The general staff within the CPD were involved in this process

“I wanted people to have some ownership over the change process, but this first change was not personally challenging or threatening. I wanted an obvious case where people could see change in the organisation” (CPD, 3/10/1996)

Initially a number of staff meetings were held where the GM discussed what he perceived to be the problems relating to current stock levels, and it appeared there was general agreement regarding these perceptions amongst staff. Then, following an idea initiated by the production manager, the stock was divided up into four sections. These sections didn’t relate to functions or forms of stock, but related to work areas. The people who were within these work areas were then accountable for the stock in their particular section. Another significant aspect of this change was the move to holding the inventory records on computer as opposed to paper copies as had been done in the past.

“Through this initiative we dropped our inventory level by just over half in three months, and this allowed us to put the money into new equipment.” (CPD, 3/10/1996)

The second initiative was to put together a consultative committee to deal with new issues and change initiatives. One of the first changes was to trial the removal of clock cards that had been an integral part of the pay system. The removal of the cards was a first attempt to increase the level of trust within the business unit. The GM commented that,

“There have been very few abuses of it and in fact people would appear to be more generous with their time. I have also been proactive with the other managers, if we see someone working extra time, we offer them the opportunity to go home early rather than them having to come to us to ask.” (CPD, 3/10/96)

Another initiative included reworking the plant layout. This involved analysing the work that the CPD had done in the past and then comparing that with the current technological capacity of the organisation. The result was the realization that they had one photocopying machine too many. The sale of the extra machine and associated support machinery that had been needed to service it, provided more space and a better fit between the technology and the primary product range.
The example above is reminiscent of an experience described in Ricardo Semler’s (1993) book *Maverick*. In Maverick, Semler’s executive teams are discussing the need to purchase 50 new filing cabinets in order to catalogue the organisation’s growing information stock pile. Semler’s response was to question what was actually in the filing cabinets, a question that no one was really able to answer. As a consequence the factory was shut for the day in order to clear out the filing cabinets, with the result that rather than buy 50 filing cabinets, Semco, Semler’s company, sold 50.

The change initiatives then began to look more closely at the personnel side of CPD’s business operations. This included increased specialization in roles between the different people within the business unit. This had the most effect in terms of the way that CPD related to its customers. The administrative staff were given responsibility for more proactively managing the customer’s needs.

"There were no demarcations, to avoid the situation where if one person was approached they wouldn’t help, but the administration people were responsible for gathering all the data relating to particular customers, almost like an account manager role"(CPD, 3/10/1996)

These changes meant that CPD was able to manage, much more closely, the match between inventory and customer demand. Previously there had been problems with clients demanding work on extremely short notice, with the result that CPD was sometimes unable to fulfill an order. By managing the customer relationship more closely, communicating more regularly with their clients, schedules of regular work were developed that allowed for forward planning on many jobs, and less chance of “getting caught with our pants down”, to quote the GM. This information was then shared with CPD’s suppliers.

I called our suppliers in at an early stage and suggested to them that it is really important that there isn’t a master servant relationship. We’re not their master and they’re not our servant and that we should work with them. I shared with them what our buying patterns were so they could plan according as well...that way they won’t get caught with their pants down and as a result neither will we"(CPD, 3/10/1996)

As well as the establishment of closer relationships with suppliers, the way in which marketing was undertaken in the organisation also received considerable attention. One example included a relationship with the local library. Bookmarks were printed that had information relating to the library’s operating hours on one side and the services offered by CPD on the other. According to the GM, many customers were students and most students used the library. The bookmarks were provided to the library for free, and with very little cost to CPD as they were made from the offcuts of other jobs, and the materials would otherwise have been wasted.
Another activity that the GM considered significant during the change process, was a one day workshop, the focus being to brainstorm the opportunities for CPD and share ideas about how the business could be improved. In order to bring as much objectivity into the process as possible, an external facilitator was employed, to manage some brainstorming and information sharing sessions. The GM was concerned that if he were to manage the process people would simply suggest things that they thought he would like and be less open to sharing their ideas.

The workshop described above was the only instance where the GM was not in control of the process, although the workshop itself was his idea. He essentially drove all the other change initiatives, and felt that to a large degree this was necessary.

"I still think I've got a way to go in this organisation. To get to stage where people do things really spontaneously is still probably a couple of years away. I'm starting to see examples or glimpses of it now and that's really encouraging....where people are spontaneously trying to gather information or spontaneously coming up with marketing ideas." (CPD, 3/10/1996)

Issues Experienced

The first issue the GM observed was that the process was extremely taxing and stressful on him as an individual, due to the perceived need to drive the change process. He had very high expectations regarding the way in which he would like to see CPD in the future and it was frustrating trying to get people to fall in with his vision. He did acknowledge that his stress in relation to this matter was a function of these expectations and other external pressures that he was under.

The second issue was that not all parts of the TAFE shared the same enthusiasm for organisational change. One of the main areas where resistance to the change process was considered most difficult to deal with, was the relationship between CPD and the TAFE, as a parent organisation. An example of the potentially divergent purposes related to some of the financial aspects of the business, in particular where CPD policies were tied directly to the TAFE processes. The GM suggested it could be thought of as a 'clash of value systems' between CPD and the TAFE. The TAFE was composed of departments, with department heads who were primarily focused on the profitability of CPD. The financial focus was in some ways philosophically opposed to the way in which the change processes had been occurring within the CPD.
"Our credo has been to look after the people, processes and functional steps in our operations, with the belief that the bottom line will look after itself......and the evidence so far would suggest we're right" (CPD, 3/10/96)

The preoccupation of the TAFE with maintaining low operating costs was sometimes found to be at odds with the credo when investment in people related issues was required.

A third difficulty was getting people within CPD involved in the change process. The GM considered this may also be a function of his high expectations and therefore the relativity of the statement should be considered. It would appear from the discussion so far that the proactive involvement of the staff in the running of the company had increased from when the change initiatives were first introduced, although, the ideal situation of employees self-initiating change had not yet been realized.

Benefits Experienced

The first benefit identified was that financially the organisation is much stronger as a result of the changes. The level of improvement in this area was being measured in several ways. The areas where the most improvement appeared to have been made included the level of inventory the company was carrying, and reductions in wage costs due to a number of factors including decreased staff turnover. At one stage prior to the change in management and the start of the change initiatives, there had been a staff turnover of 40 staff within a three-month period. It should be remembered that CPD only employs 16 people, therefore the magnitude of this figure speaks for itself.

Financially, profits had increased, however, the increase was due to cost savings and not increased work. In fact the number of orders or level of work actually done had decreased, with operating costs decreasing by an even greater margin.

The second benefit the GM observed was that CPD was now a more creative environment, and people felt less inhibited to contribute to change initiatives. The process through which decisions were made had also changed,

"I don’t think we take any longer than other companies to make decisions but now our decisions are more informed." (CPD, 3/10/1996)

As a function of this, the organisation had been able to both improve its technology and the way in which it used the technology to maximize its returns.
The third area in which the organisation had benefited from the changes was in the way that clients perceived the company.

"The perception of our external clients is that we now have a good reputation and this is based upon a client survey we conducted into the level of customer satisfaction." (CPD, 3/10/1996)

This point is significant as over the next twelve months one of the focuses was to generate more external income from clients outside the TAFE. It was perceived that this would involve reworking the technology and people processes to align more closely with external client needs, for example an increase in the company’s capacity for colour printing. The other focus for the future was to provide electronic ordering over the Internet.

CPD CONCLUSIONS

One of the main points to emerge from the interview at CPD is that the size of the company would not appear to effect the process by which people perceive it. The language used to describe the notion of an organisation was subject to the same ontological inconsistencies already noted at Ford and Hewlett Packard.

The GM’s definition for a learning organisation was as follows,

"Its an environment that facilitates contribution, creativity, abstract thought in the work place. One that creates participative contributions to the organisation itself. It has a tangible structure or parameters, with freedom inside those parameters. It needs to be an open system with a raison d’être of survival"(CPD,3/10/1996)

The above description engenders the notion of an organisation with the ability to effect the behaviours of people ‘within it’, at the same time allowing the people to interact with it as an independent entity.
The notion of the learning organisation in 3M\textsuperscript{16} was strongly related to the notion of innovation and through that continuance of competitive advantage.

"3M is a fairly innovative organisation. Any big organisation will have a bureaucracy that will try to limit the activities of its people to within certain bounds because otherwise they can’t manage from the top. We need to make sure as managers that we provide an environment in which these people can flourish...the role that we play here, from a technical management viewpoint, is to protect that creative spirit from the bureaucracy and harness as much as possible that creative spirit that does exist”(3M 1, 15/10/1996)

Within 3M there were a number of both official and unofficial processes designed to encourage a creative, learning, environment. Many of these are well known and documented, although the person interviewed repeated them. The first of these is that 7% of sales revenue is put back into research and development. At the time of the interviews this figure translated into a worldwide research budget of roughly $1.5 billion US. The outcome of this process, according to the person interviewed, is a constant focus on R & D, and therefore the promotion of innovation.

Other initiatives that have been well publicized include the ‘15% rule’ where technical people are encouraged to spend 15% of their work time on projects of their own choosing and initiative.

"there is a stipulation that the project must have some connectivity to the business – for example water skiing would not qualify, however, it provides people with the opportunity to undertake projects without approval, using corporate resources”(3M,15/10/1996)

Another initiative is the ‘30% rule’ that requires all businesses within 3M to generate 30 % of annual sales from new products and services introduced in the past 4 years. Collins & Porras (1994) list another 12 similar ‘mechanisms’ that 3M have as part of their organisational processes which encourage sustained creativity and innovation on the part of its employees.

Another major focus at 3M was the continuous education and up-skilling of its employees.

"If you do not upgrade your skill levels on a regular basis then your value to the organisation on a skill basis is going backwards. If it’s a degree course or not doesn’t matter but it must have a

\textsuperscript{16} Only one interview was conducted at 3M. The individual who was interviewed suggested some other people in the organisation who would also be able to provide a perspective on 3M’s approach and had experienced issues. However, when contacted these people suggested that there were no efforts in place to move 3M towards the ideal of a learning organisation and that in the near future the idea was to be reviewed.
structured curriculum....the organisation in almost all cases will refund the cost of tuition.....and
this is just to stay on the same level as you are already on and we equate that with about forty
hours of structured studies per year. If you wanted to move ahead you’ve got to put a lot more
into it because the technology is moving so fast that unless you keep up with it you go backwards
and as you go backwards your value to the organisation decreases.”(3M1,15/10/98)

The educational focus was reinforced through a strong connection to career development within the
organisation. This was facilitated through 3M’s appraisal system. Individual appraisals are directly
tied to the business plans and career goals of employees.

“Each of the divisions has a business plan to which we link the technical plan. The technical plan
then identifies what skills I need to make that plan work. The activities that flow from each of
those are written up into performance expectation worksheets. At the end of the period we get a
performance appraisal from the supervisor. In the performance appraisal we also look at long term
goals...where do you want to be in 5 years time? Once you’ve identified what you think you want
to be then from that flows quite rapidly what you need to do to get there.”(3M1,15/10/1996)

As such, remuneration is linked to learning as it has been in Ford, yet there is far greater flexibility in
terms of the way in which it is administered. The skills required in the business plan comprise one
aspect of the learning requirements, the individual’s personal goals constituting the other.

In 3M the emphasis on learning started around ten years ago, however, other initiatives such as the
15% rule have been in place longer than thirty years. The way in which the initiatives began varied
widely. The person interviewed considered it was unlikely there was anyone left in the organisation
that would remember how initiatives such as the 15% rule came about. When asked if initiatives like
the 15% rule could be instituted from the bottom of the organisation as well as the top, he suggested
that it could work either way, that communication across levels was fairly good.

“One of the reasons we don’t appoint any of our senior managers from outside, is because we want
to make sure that those that we appoint in those critical linkage positions are people that
understand the 3M culture”(3M, 15/6/98)

Benefits Experienced

The first and main benefit identified was the constant flow of new products and technologies. This
flow of developments, it was observed, generally translates into a higher probability of producing a
winning product. That the working environment at 3M encourages creativity and innovation has a
number of other benefits that flow on from this. According to the person interviewed people,
generally speaking, enjoy what they're doing, making for a pleasant atmosphere to work in. This is perhaps further supported by an internal survey that was conducted at 3M to assess how the 15% rule was being used.

Of the respondents to the survey, roughly 40% of technical staff said they did use 15% of their time on their own work related projects, however, almost all respondents suggested that they did so outside work hours. The person interviewed suggested that this was because they were enjoying their work and like most things you enjoy, you will find the time for it. The 15% rule is not policed, as that would only add to administration and probably cancel out any benefits that arose from the rule.

The second key benefit identified was that 3M makes good profits. The person interviewed suggested that it was the combination of the elements described above that allowed the organisation to continue to grow and produce good profits year after year.

**Issues Experienced**

The first issue identified was the proliferation of bureaucracy within the organisation.

"We have forms to fill out in the morning, forms to fill out in the afternoon and so it goes on. Of course most organisations have this problem in one way or another, and relatively I don't think 3M is too bad, but it remains an issue"(3M1, 15/10/1996)

The proliferation of bureaucratic processes represented a continuing challenge to the development of the learning organisation notion rather than being a result of it. In essence the more administration that was required the less time could be dedicated to creativity and innovation of new products.

The second issue that was identified related to the risk of losing valuable people. The person interviewed pointed out that the more education and skills that people develop the more valuable they become not only to 3M but also to other organisations.

"That’s an outflow of knowledge and information and an investment that we have made that we would like not to see. So that is a problem but it doesn’t stop us because a positive element is that we have a rotation of people, and so while we have great pride that we have people who have worked here 30–35 years there is a also a staleness that goes along with that because unless you regularly shift, say every 5 years you will go stale. So we need to look a bit more closely at the rotations of people and make sure that don’t sit too long in any one place."(3M1, 15/10/1996)
Another problem that emerges from the appraisal and education process that operates in 3M, is that there are not always jobs for people once they have skilled themselves up. The person interviewed gave the following example,

"Say somebody has studied physics, and they want to concentrate on optics, and while that's a very viable field at 3M generally, we may not have the opportunity for them to work on that over here at that particular time, because either the product has not been completed yet or the project was discontinued. That sort of thing happens from time to time. The other side is that we give them a career development course to work on and that course may well lead them out of the organisation" (3M1, 15/10/1996)

The issue for 3M, therefore was to maintain a balance between providing its employees with every opportunity to learn, develop and realise their potential, and at the same time retaining these people and getting value from the investment.

3M – Conclusions

3M, although needing to remain competitive in order to survive, has not made any radical changes to the way it operates at least in the sense that Ford or CPD has for example. 3M, on a global basis, was the oldest company where interviews were held and therefore many of the principles upon which the culture has been based have been with the organisation for several years.

The results of the interview at 3M only describe one aspect of the organisation, however. The individual who was interviewed, held a role in the organisation that involved the facilitation of creativity and innovation and therefore the aspects of the organisation most central to allowing him to do his job were those that he raised. Further interviews in other divisions of the organisation would have provided a clearer picture on how consistent these views were across the company.

The key point for consideration that emerged from the 3M interview was that the environment of the individual had an important role in the way that the organisation operated. The interviewee referred to the work environment at 3M on several occasions as the characteristic that most differentiated 3M from other companies and allowed it to continually produce new and innovative products.

Herman Miller (Australia)

Herman Miller’s core business is in the research, design, manufacture and sale of furniture systems, products and related services principally for offices and to a lesser extent health care facilities.
Australian operation is small in comparison to the organisation’s overseas operations, employing approximately 30 people at the time of the interviews. The organisation had in the past 5 years made a number of significant changes to the way in which it operated. These changes, although related, were not made with the explicit goal of becoming a learning organisation.

Prior to the 1990s, Herman Miller’s products were 100% imported from the overseas parent. During the early 1990s, the CEO felt the need for Herman Miller Australia to become a more fully functional organisation in its own right and this included the design and manufacture of its own furniture. In line with this change, the CEO recognized that Herman Miller’s product suited particular organisational environments

“His initiative with regard to the learning organisation was an understanding that the research information and the products that Herman Miller provide are very much supportive of organisations that have a dynamic. That is a change, where they have to structure in teams or whatever it is and be able to change very quickly to become reactive to the needs of their own business objectives”(Herman Miller 1, 6/11/1996)

This recognition lead to the chief executive becoming involved in discussion groups with a number of people in other organisations, including Professor Bill Ford whose work will be discussed in more detail with relation to other companies where interviews were held. Gradually other members of Herman Miller became involved in these discussions, however, the organisation at this point didn’t undertake any major changes.

“It wasn’t a holistic approach… In terms of a real learning organisation at that point it hadn’t reached the point where you could say we had become a learning organisation. It’s not to say that one person can flick a switch and you become a learning organisation – we were learning for sure but to what extent…. it requires a philosophical and cultural change and the culture is the hardest party to change.”(Herman Miller 1, 6/11/1996)

Following this phase, the CEO left the organisation and for an extended period of time (approximately 8 months) the organisation operated under a self-organised management team. This was followed by the appointment of a new CEO and coincided with the restructuring of the organisation to operate in teams.

“We set up cross functional teams….we looked at what we believed were our seven unmatched values and we created task teams to support the critical tasks needed to validate those unmatched values for our organisation”(Herman Miller, 6/11/1996)
"There’s a number of different teams, there’s a management team, a finance team and there’s cross functional teams….these are customer or client focused teams. So instead of having a sales team, an administrative team, a design team and a facility support team we took one member out of each.”(Herman Miller 1, 6/11/1996)

The teams can be divided into two types. The first are the cross-functional teams who manage the work and secondly there are ‘task teams’, whose role is more strategic in nature and involves people from across the organisation. As such, it is possible to be the member of a cross-functional team and two or three task teams at the same time.

“So there are the teams that people work in each day and then there are the task teams that work on specific business related issues that arise. Business improvement programs for example…..people are invited to join those teams, very rarely does someone say they don’t want to do it but they may say yes and then don’t turn up. We’ve allowed a natural flow of people through those teams, you can have six people in one of those, someone might say, I’m in six teams and drop out so we add another person from somewhere else, or people may want to get involved in another team.”(Herman Miller 1, 6/11/1996)

The development of a team based structure at Herman Miller (Aust) had brought with it a number of positive as well as negative implications.

Benefits Experienced

These changes led to significant improvements for the organisation, particularly in terms of its internal processes.

“Now we’re more accurate with our planning, we’re more accurate with our drawings, more accurate with our bills for material, we’re more accurate with our project management, we are more often on site on time and leave on time.”(Herman Miller 1, 6/11/1996)

From the perspective of processes, the movement to a team based structure with relatively flexible job roles provided improvements to the management of projects on an individual basis. These improvements were tempered, however, by a number of emerging issues.
Issues Experienced

From the perspective of at least one person interviewed, the changes had taken the focus away from doing business. This was seen as a problem because even with the improved internal processes, Herman Miller was doing less business.

"Now we've got to start to look outside again to drive more revenue.....as we've gotten better at our processes, we have less to do it with, so we need to get the focus back on our customers."(Herman Miller 1, 6/11/1996)

Although at the time of the changes, the movement to teams was obviously considered the right thing to do, a number of issues, beside the marketing one described above, have begun to emerge.

"We're not sure that that's [the change to a teams structure] ideal now, it appeared....to be the right way to go but we've started to develop yet another culture where these satellite teams became autonomous to the point where if one was really busy and one wasn't, the one that wasn't busy didn't want to do the work of the other team and pick up the overflow because they became very territorial. The positive side of that was they were a tight business unit. The downside is that you can't afford to have a half million dollar commitment in a business unit sitting idle. So a whole new set of problems evolved. I think that the big lesson is that there is no one answer because time doesn't stand still and so what is right for today there's almost every chance that it won't be right for tomorrow so rather than make one change and sit still and enjoy it you should be planning beyond it almost at the point of its conception – you cannot stop."(Herman Miller, 6/11/1996)

Herman Miller – Conclusions

Herman Miller (Aust) would appear from the interviews to be a company that has gone through quite significant changes over the past 4-5 years. The changes have led to a number of improvements but at the same also created new issues. This is consistent with all the companies interviewed. A point that should be noted, however, is that the issues that were being described at the companies have only become apparent through the change or learning initiatives that have been put in place. Although there is general consensus amongst interviewees that the changes have had a positive effect on the way that the company operates, new issues are being perceived in the results of those changes.

It is interesting to contrast the use of teams in this organisation and the way in which they have been adopted in the other organisations where interviews were conducted. The teams at Ford and those that will be discussed below at Kent Brewery, formed part of a chain where each team is dependent upon the others up and down the line for a successful outcome. At Herman Miller this was not the
case, each team was multi-skilled in order to cover the complete production process of the company. Having said this it is interesting that participation in other task teams would appear to have done little to reduce the lack of cooperation between the cross-functional teams. Other changes to the work environment would appear to be required in order for the organisation to operate as a whole.

Kent Brewery (Carlton and United Breweries) – CUB

Since 1995, Kent Brewery has operated within the Carlton and United Breweries group. The decision to become a learning organisation was directly in response to a crisis in the form of imminent closure. The brewery had been operating since 1835. Throughout this period Kent Brewery had been considered a leader regarding employee award levels among Australian breweries. During 1970s and 80s, however, the brewery had gradually developed a poor reputation with regard to industrial relations, with several ongoing work stoppages and disputes. The organisation was also strongly demarcated in terms of employee's roles and responsibilities. Award restructuring had not been overly successfully in addressing this issue.

The site where Kent Brewery is located, close to the central business district of Sydney, is also significant due to the value of the land. Essentially Sydney has grown up around the brewery. By the late 1980s, early 1990s the cumulative effect of these issues meant that Kent Brewery was not a feasible operation and CUB Head Office, in Melbourne, proposed to close the plant. A management team was put together to examine a range of options for moving the brewery to a new site, significantly not all included plant closure. As a part of this process, in early 1991, 8 members of the management team from Kent and Melbourne Head Office visited the ICI Botany plant that had been dealing with similar issues. The Botany plant had, in the mid to late 80s, also been earmarked for closure due to tariff changes and a break down in industrial relations between ICI management and the unions of the hourly paid workforce (Mealer, 1997). Through this visit, members of the team met Professor Bill Ford who had been working with ICI to turn the plant into a learning enterprise. Professor Ford was able to provide, from his experience with ICI and other organisations, a theoretical framework to assist the team move forward. Through continued conversations with Professor Ford, the team asked the question

"If Kent Brewery were a greenfields site how would we organise the work organisation, what would be the objectives you would set?" (CUB 1, 10/12/1996)

It was from this process the notion of a learning enterprise began in Kent Brewery.
The team put together a proposal for the new organisation to take to the employees. This could not take place, however, until the team had presented the ideas to the unions. Due to the history of industrial action on the site, there was a general lack of trust between the unions and the company. This situation was to change over the course of the processes that followed. What the team presented was a radical departure from the direction of previous meetings and very different to the idea of closure. In the words of the person interviewed the message was simple 

“"This is the shit we're in, how can we work together to get out of it” (CUB 1, 10/12/1996).

The meeting between the management team and the union representatives took place in late 1991. In February 1992 a two page Development Agreement was signed which stated that the unions, employees, and the company would work together towards turning the brewery into a viable business. The following 18 months involved extensive work by the team, to examine the current state of the brewery and determine the initiatives that would be required to make the business viable. This process resulted in the signing of an Enterprise Development Agreement (EDA) in December 1993. It is important to note that during the 18 month period, the first EDA went through 20 drafts and the development of several visual presentations before being accepted. Professor Ford suggested that this continuous process of redrafting represented a significant element of the change process. The drafts were widely circulated throughout the organisation and as such raised the awareness of employees to the issues and the possibilities involved in moving towards a learning organisation. The development of visual presentations was also significant in terms of communicating the concepts that underpinned the change process.

Enterprise development agreements (EDA) will be discussed in more detail in Appendix (2) as they were undertaken at a number of other companies where Bill Ford became involved. Essentially the EDAs allowed for more flexible work practices and a participative approach to the way in which awards and conditions were agreed. This was in contrast to the typical Enterprise Agreements (EA) which had a duration of 12 months. At the time of writing an EA, the union would bring a number of claims to management, negotiations would take place, an agreement would be reached and signed. The agreement would last until the next 12 month period had past, at which time another series of talks would ensue.

Over time the EDAs became more sophisticated in terms of the measurement of skills and the way in which skills could be rewarded. As expected this process is an evolutionary one and continues with the second EDA finishing on the 30th June, 1998. The EDA that was in place at the time of the interviews, was signed in 1995 and involved the participation of six different unions and the Labour
Council of New South Wales. Of the three main breweries in the CUB group, Kent Brewery was the first where this initiative was implemented. The other breweries have since followed. It would appear from the interview that Kent Brewery became, for a period, the most innovative brewery in the group, however, over time other plants have begun to implement initiatives of their own.

The first major element in the change process was the establishment of a learning centre on site. This coincided with a shift to self-organised work area teams to run the production line and the change to a pay-for-skills remuneration system. The teams have a multidisciplinary skill base, mostly production oriented employees, maintenance, operators and managers. This structural change coincided with a total organisational restructure and downsizing. This process was linked to a structured education program to provide the production workers with the skills needed to operate in a teams structure. Each team developed as its own unit.

"It’s been very evolutionary, we haven’t said here’s your team, you’ll do this, this, and this - that’s it. It’s been about developing the skills within those teams to match the philosophy and guidelines that we’ve set for how the teams will operate. It’s also been dynamic. The teams have largely developed at their own pace dependent upon the attitudes and skills of the people within the teams." (CUB 1, 10/12/1996)

The whole process was by necessity very participative, driven mostly by the Work Organisation Team (WOT). This team acted as a consultative committee, communicating the ideas and managing the feedback from the shop floor and the unions. The initiatives were internally developed with limited use of consultants. Although Professor Ford had considerable involvement in the process, it was more as a mentor, providing ideas on how the organisation could change rather than detail implementation of the changes.

Once the team structure was in place, an ongoing framework of learning was implemented. Over time, the focus of this education program has changed

"To start with the focus was on soft team skills. Now the focus is moving towards the more technical content". (CUB 1, 10/12/1996)

Many of the courses were facilitated through TAFE. One of the major difficulties that needed to be addressed in this area was the low literacy and education levels. This situation was the result of old employment philosophies where people who had limited education and literacy were employed. This followed the old style managerialism where workers were encouraged to
"Leave their brain at the gate." (CUB 1 10/12/1996)

As a consequence of the old employment philosophy, 70-80% of Kent Brewery employees are from a non-English speaking background. The development of literacy standards was considered the basis from which other learning activities could be gradually implemented. Consequently, language teachers were heavily involved in team development programs. Employees were not forced to do these courses although most were happy to do so. The literacy program is still in place 5 years later. Several Australian born employees also requested to do the course.

Extensive spending on capital in terms of packaging lines, later played an integral role in the transformation of the Kent Brewery site. Today it is one of the most technologically advanced sites in Australia. Much of the equipment was imported from Germany, with teams sent on two occasions to Germany to familiarise themselves with the equipment before it was brought to Australia. This had a positive effect on installation and commissioning times and consequently cost. It also allowed Kent Brewery’s people to train the teams who would operate and maintain the equipment. Previously, the engineers from the manufacturer had done this, with a number of language problems. The experience gained in implementing the new technology at Kent, has since been extended to other bottling lines in the CUB group.

The ongoing process of refining the education programs and focusing on the literacy and skill levels of employees continued with the beginning of the second EDA in May 1994. As noted the next major stage in the EDA process took place in June 1998, with the signing of the second EDA and the beginning of the third.

**Issues Experienced**

According to the person interviewed, the speed at which the initiatives took place was adversely effected by the size of the change involved. During the process, Kent Brewery experienced considerable downsizing. During the period from December 1993 to the time of the interview, the number of production workers at the site was phased down from 640 to 340. This number was expected to fall further to approximately 330 by the end of the second EDA in June 1998.

There were no forced redundancies at Kent Brewery, staff redundancies were on a voluntary basis. This had the negative effect that some employees who, due to their experience and knowledge were highly employable, left the organisation. In the words of the person I spoke to;
“there was a skills drain... at various times the wrong people put their hand up because it was a fairly attractive package...”(CUB 1, 10/12/1996)

The organisation suffered a significant loss of know how that it is still trying to replace years later. Another issue that was identified related to the culture of the organisation.

The person interviewed considered that they hadn’t been able to overcome the overtime driven culture. As such in the coming year, several initiatives were being put in place to turn the focus back onto performance. This point was significant, as Kent Brewery was still the most expensive producer out of the CUB’s 3 major breweries and even with the changes that had taken place, survival was not a foregone conclusion. At the time of the interview, it was perceived that this issue would be addressed through changes to the remuneration processes, with teams established to address the issue.

**Benefits from the Process**

One of the greatest benefits experienced through the change process has been a far higher level of commitment from the workforce. In part this has been facilitated through a very flat organisational structure. At Kent Brewery, there are now essentially three levels, in the production division, between the top of the organisation and the operators. Most employees now have a good understanding of where their role fits in the larger production scheme with a reasonable idea about the performance of their area. This awareness has been facilitated through increased communication and discussion of performance figures. This process was supported by the learning centre, where employees were shown how to develop and give presentations.

**Kent Brewery-Conclusions**

The processes of change that have been outlined above will continue to take place at Kent Brewery. As already noted, the Brewery’s survival is still not assured and changes to the remuneration systems will take place.

It is interesting to note that the team related issues experienced at Herman Miller did not occur at Kent Brewery. On occasion some members of teams will come across and help the other teams. According to the person interviewed this usually occurs when there is a mechanical problem with the line and is the exception rather than the rule. The difference with the teams at Kent Brewery is that they form a chain of production processes, therefore if one falls down the whole system suffers
significantly. The remuneration systems at Kent Brewery were also not tied to the performance of the teams but remain on the level of the individual worker.

"...and we did that purposefully to avoid that issue because we observed it at some other organisations where they were using teams." (CUB 1, 10/12/1996)

Like the other organisations discussed so far, the difference between organisation and individual was not clearly defined. Furthermore, the notion of a team also was treated as a separate entity, given the ability to act without reference to the people within it.

**Lend Lease Corporation**

Lend Lease Corporation (LLC) was the last organisation where interviews were conducted and proved to be the most significant in the context of this research. At the time of the interviews, the Lend Lease Group was an Australian-based real estate and financial services organisation offering a diverse range of products and services, including real estate investments, project management, property development, funds management and life insurance. Through its various joint venture partnerships, information technology and telecommunications services were also offered.

In terms of the learning organisation, LLC falls somewhere between Hewlett-Packard and Carlton United Breweries, in that over the past twenty five years there is a history of incremental changes that have supported a learning culture. Having said this, in the early 1990s the process of Enterprise Development Agreements (EDA), as seen at Carlton United Breweries, was undertaken by several parts of the organisation including most notably Civil and Civic, Lend Lease's construction business, and MLC, the principal company in the Group's financial services.

"It started with an examination of the enterprise agreements for Civil and Civic in the late 80s. In that area we had always been pretty innovative in what we'd done.....things like superannuation, profit share, things like that.....the feeling was that others were catching up so its time to make the next leap forward. We decided that enterprise agreements weren't the way to go. We went around to a whole heap of organisations and found ICI Botany who had actually done something.....we figured they were in a similar situation to the building industry: hostile environment, hard working conditions etc.....seemed appropriate. So we learnt a lot about what ICI Botany did and applied it to the building industry. So we put in place a number of initiatives self managed teams, changing the role of the supervisor..... fairly normal change stuff, and that I guess was the organisational innovation approach. We've also been very good at incremental improvement...restructuring etc..... we also have a philosophy of project management - it's a philosophy of planning something, doing something and evaluating it.....So you put those three things together
organisational innovation, incremental improvement and a process of project management and that's our approach to the learning organisation if you like.”(LLC1,11/12/1996)

The combination of these changes has been arguably successful with Lend Lease posting 23 years of consecutive profit growth, which is significant for an organisation that began as a building company. It should be considered that the property market, in particular construction, is highly volatile and Lend Lease is probably unique amongst other construction companies in the way that it has dealt with the boom/bust cycle. Like Hewlett-Packard and 3M, many aspects of Lend Lease’s structure and culture have developed incrementally to encourage learning and innovation.

Due to Lend Lease operating in a number of diverse industries, the way in which a learning environment is created varies from business to business. At the time of the interviews, the different businesses operated for all intents and purposes autonomously of each other

“We don't buy centrally, we're all separate autonomous business units, a federation of business units rather than a combined entity...therefore any approach to the learning organisation has to be culturally specific.”(LLC1,11/12/1996)

This situation was at the time of the interview beginning to change. The organisation was growing rapidly in terms of size and the geographic regions in which it was operating. In order to capitalise on the organisation's size and the capabilities of its people, it had been identified that the process of coordination between businesses around the world needed to change.

“The process we're going through is one of evolving the culture from a national to a global culture which is less painful for us because we've had time to prepare. Its not a crisis. We can do it in a planned and long term way...it's one of building our current culture because we believe its applicable in any industry anywhere in the world.”(LLC1,11/12/1996)

In terms of the organisation's survival, therefore, other broader issues were emerging.

“The management of knowledge is a huge issue.... how do you capture, integrate and disseminate knowledge that's acquired at different places and that at this stage is handled at the business level. Because we're in such diverse businesses its difficult to make it a corporate wide thing. For example, we're currently just starting the construction of a huge shopping center in the UK, which will be the largest shopping center in Europe. How do you actually take the learning we get on that project and bring it back here. Some things we do are to have a number of our key people spending time both here and there to bring it back....but it's still a long way away. We have the capability to put things on line and stuff like that. But that's not the knowledge. Its the tacit and implicit knowledge and capturing that...we've got Lotus Notes databases and stuff like that but
that still doesn’t capture the essence of what you’ve done. It doesn’t deal with the fuzzy things
and the fuzzy things are what we’re good at. They’re what differentiate Lend
Lease.”(LLC1,11/12/1996)

Traditionally people had been able to share their knowledge within the one office but this natural
process doesn’t work on a global scale. The culture at Lend Lease is anti-structure for want of better
term. There are no organisational charts, as the organisation changes so rapidly they are instantly out
of date. The hierarchy is very flat,

“It’s not uncommon for project managers to go straight to the chief executive if they have an issue,
so they will just go and jump four levels....”(LLC1,11/12/1996)

“It’s a network organisation so your ability to work in relationships and network is your value. So
the larger and better your network the greater your chances of succeeding.”(LLC1,11/12/1996)

Traditionally Lend Lease had gone without an HR department, the theory being that HR was a line
management responsibility, so everyone was responsible in some way for this aspect of the business.

Benefits Experienced

The benefits of the way in which the organisation was run were very clearly communicated

“The 3 greatest benefits of what we do are;
1. We have an ideology, set of values or a process that is strong unique and valued,
2. We have a capable, hardworking, motivated workforce,
3. We have an incredible reputation in the market place.”(LLC1,11/12/1996)

The organisation’s ability to change and change rapidly also presents an issue in terms of retaining
what is good about the organisation. Without at least some centralisation of organisational functions,
capabilities and knowledge quickly dissipate to reform into something else. Maintenance of some
functions requires the cooperation of a number of stakeholders, which is not always ideal. This point
was illustrated in the issues that were identified.

Issues experienced

“It’s never going fast enough, and.....The process of getting ‘buy in’, .....I guess getting core
businesses lined up is sometimes difficult. I mean if a chief executive says jump – no one will say
how high. It’s just not the culture in Lend Lease. It’s got to be mutually beneficial so leadership
comes in a slightly different form. If you want to do something here, you've got go around and convince people of the benefits to their business." (LLC1, 11/12/1996)

The result of the above situation is that ideas or initiatives may not be implemented. The idea or initiative itself has to survive. If people in the different businesses are unable to see the value of something it will not continue for very long in the company. This point may be viewed in 2 ways;

1. Only the best ideas or initiatives are adopted and therefore the organisation doesn’t waste time and money on projects that don’t add value to the organisation.
2. Organisational change is slow, as it requires all members to “buy-in” to an idea and as a consequence some good ideas or opportunities are lost to the organisation.

Whether the difficulty of aligning the different parts of Lend Lease is seen as an issue or strength of the organisation, may also be relative to the position the people interviewed held within the company. The roles held by the interviewees, largely involved the implementation of people related initiatives within the organisation and often required the “buy-in” of people from across several businesses within the company.

Lend Lease Corporation Conclusions

It appeared from the interview that there was an uneasy balance between the benefits of a very free flowing structure and the lack of centralisation. The uneasiness was further amplified by the fact that the organisation was no longer a small Australian operation, but a rapidly growing global company. The multitude of cultural, industrial and national environments that it was now operating in made it increasingly difficult to manage the business efficiently in the way that it had done before.

It appeared from the interview that a number of the changes that the other companies had undertaken were also in evidence at Lend Lease. The identification of knowledge management as a major issue was something that permeated through most of the discussion in some form or other, even though it wasn’t explicitly identified as an issue in the issue section of the interview. It appeared that the different parts of Lend Lease were very effective learners, but did very little learning from each other.

As such, knowledge management for Lend Lease was about keeping what was good about the current structure and culture, and adding an extra element to it to capitalize on its increased scale.
Appendix 1b – Interview Questions (Phase 1)

Below in italics is a copy of the questions participating companies were sent for Phase 1 of the research.

Below is a list of sample questions, these should give you a guide as to the type of information I am looking for. I would envisage that the interviews will take 45 minutes to 1 hour, however this is of course dependent upon the answers I receive. The interviews would be semi-structured, so although I will stick fairly closely to the questions below, I may ask for some elaboration depending on the response. I would also like to tape the interviews if possible. I recognise that your confidentiality is very important and I am happy to sign any confidentiality agreements you may have. Only I will have access to the tapes and the University has strict confidentiality guidelines which my research must satisfy. Once again, you assistance with my research is greatly appreciated.

Questions

1. Over what period of time have the people within your company made a conscious effort to move toward the idea of a learning organisation and which theory/s originally informed the initiatives?

2. Were the initiatives originally implemented across the whole organisation or limited to within specific departments and do you feel that this created issues in terms of the outcomes you received?

3. What was the form of the initiative that was developed. ie. the creation of work teams, increased training, workshops...etc. What made this approach more appropriate to your situation than any other?

4. Were these initiatives developed through a participative process with staff or were they independently determined and implemented?

5. Were the initiatives implemented by external consultants or people from within your organisation?

6. Were there any benefits which emerged from these initiatives? What do you feel were the three most significant and why?

7. Were there any difficulties experienced during the process of implementing the learning initiatives? What do you feel were the three most significant and how did you attempt to address them?

8. Are you satisfied with your attempts to address those issues? Why?
9. Are you planning to continue with the initiative?

10. What do you hope to achieve over the next twelve months in terms of addressing the issues we have already discussed.

11. Could you give me your own definition of what a learning organisation is?
Appendix 2 – Enterprise Development Agreements

Enterprise Development Agreements (EDAs) emerged in response to the need for cultural and conceptual shifts in Australian industrial enterprises. Initially it had been hoped these changes would come about as a function of the award restructures of the late 1980s, however this was not the case. One of the many reasons cited for the failure of the award restructuring process was that

"...the occupational focus of award restructuring can be very different from an enterprise’s focus, and negotiations over awards have traditionally been thought of as quite separate from negotiations about business planning. This artificial dichotomy is further exaggerated when different managers look after each area.” (Field & Ford,1995,pp49)

To address this issue, Professor Bill Ford’s work at a number of companies first at ICI Botany, then Kent Brewery and Lend Lease, through Civil and Civic and later MLC, sort to breakdown a range of dichotomies and encourage a learning culture. The key feature that differentiated the EDA’s from traditional enterprise agreements was that they are not an agreement about what a company is going to do, but an agreement about what has been done. EDA’s are preceded by Joint Development Agreements

"A genuine Joint Development Agreement is a process by which the entire organisation, including the unions involved, go on a learning journey. And at the end of the journey comes the Joint Development Agreement – not at the beginning of it."(Anon,1993a,pp6)

Although each EDA was different to reflect the range of needs within the different companies, there were a number of base principles and methods that were employed at each site.

What follows is brief overview of those principles and methods.

Step 1- In practically all cases the establishment of concept teams to explore the changes that were required was first step the organisations undertook.

"When we talk about concept teams at Lend Lease, I am not talking about your traditional planning groups. Planners tend to draw up nice designs. But they have no responsibility in relation to the delivery of those plans. “(Anon,1993b,pp4)

"These concept teams are there to reduce the risk of change. That's very important to understand...These people have the responsibility to deliver as well as plan.”(Ford,1995)
Concept teams were generally drawn from line management, as these people were able to communicate with both the general employees and the senior management of the organisation. Of great importance in this step was the gradually establishment of trust between the parties involved. In the case of ICI Botany, Kent Brewery, Civil and Civic and the MLC, there was history of antagonism between the senior management of the organisation and the representatives of the employees in the unions.

Step 2 - Communication of the change need to the employees

"The way it works the Concept Teams develop the ideas. They then have to sell them to senior management. When senior management has accepted these concepts, they are then taken down to the troops, sold to them, and the employees are then involved in developing the road map to achieve the company’s aims."(Anon,1993b.pp4)

Step 3 - The development of a business plan which acts as a roadmap. Employee involvement is central to the success of this stage. Employee involvement took a number of forms including search conferences, focus workshops and the development of training modules.

"Its amazing how deeply people get involved when they start writing their own skill development program. In fact, the people who were the strongest proponents of change in the Lend Lease Group were the ones who had been the most deeply involved in writing their own skill modules." (Anon,1993a.pp8)

The process of developing the business plans also involved redesigning the work organisation of the companies towards teams based structures.

Step 4 – Trialed implementation of the business plans for an agreed period of time.

Step 5 - Confirm the trial period through a Joint Development Agreement. In order to confirm the commitment of the company, employees and unions to the process, the signing of the JDA takes place. A significant aspect of this process is that all people involved in the development sign off on the agreement.

"Some people are still locked into the old paradigm that only the manager and the union leader need to sign off the agreement. When we draw up an agreement, we get every key person to sign it to develop ownership." (Anon,1993a.pp7)
Step 6 – The changes that flowed from the process above were then monitored, evaluated and continued. At the end of the trial period, the Joint Development Agreement is superseded by a Enterprise Development Agreement. Like the Joint Development Agreement, the EDA is agreement of the achievements and progress made over a period of time, and includes the goals set out for the next period.

In the case of Kent Brewery, EDAs are redrawn approximately every three years, however, this period varies from business to business. All the companies mentioned in Chapter 1, who underwent the EDA process still continue to do so at the time of writing. It should also be noted that unlike most industrial relations documents, EDAs are written in plain English that is easily understood by the workforce. Everyone effected by the EDA receives a copy once it is produced.
Appendix 3 – Results of the Case study

Consistent with the methodology described in appendix 1, the results of the case study will be described in two stages;

- semi-structured interviews and workshop,
- participant observation of knowledge management projects

Over the period of the case study, several projects and initiatives emerged that related to knowledge management. In describing these projects it has been necessary to concentrate on those ones that were directly related to the topic rather than being obliquely supportive of it. This approach carries implications for the proposals that are made in Part 3 of Chapter 6. The gradual development of the organisation’s knowledge management capability is a function of all the projects, even though not all are mentioned here. A full examination of this issue is discussed in Chapter 7 in relation to the critique of the methodology.

A company driven workshop (separate to the workshop conducted as a part of this research) was held mid-way through 1997, in an attempt to more clearly understand the different projects that were occurring across the group and start the process of developing a coordinated plan for human resource issues. People from across the group who were involved in projects relating to people development and organisational issues attended. Through the process of the workshop 165 ‘people initiatives’ were identified as ‘in progress. A further 29 were planned to commence in the near future. It should be noted that this workshop was based on people from Lend Lease’s Sydney offices only.

The projects identified in the above workshop included communications related initiatives, information technology and training, leadership development, recruitment and exit procedures, succession planning, reward and recognition, industrial relations, BPR processes and family support schemes. In some way nearly all of these impacted on knowledge management within the organisation, however, in most cases knowledge management was not the objective of the project.

The projects that are described in this appendix, related directly to the knowledge management issue in someway. Some are corporation wide initiatives, others are business unit specific. In most cases these projects or spin-offs from them are still in progress at the time of writing.
Part 1 – Semi Structured Interviews and Workshop

Through the semi-structured interview process, a broad range of issues that could potentially effect the organisation’s ability to manage knowledge were identified. Many of these issues related specifically to the roles of the individuals that were interviewed. An example of this would include inequities in reward and superannuation processes in the different countries that Lend Lease had operations.

As is also to be expected, some interviews were more insightful than others in terms of describing the issues that the organisation needed to address. Typically senior executives who were interviewed gave broader, cross-divisional descriptions of the issues, as opposed to the business unit specific descriptions given by other participants.

From the interview data, the following list of issues was identified.

**Continually re-inventing the wheel**: Due largely to the organisations construction roots, where employees were regularly moved from job to job, positions are held for short periods of time in Lend Lease. Typically people will change roles on a yearly basis, sometimes to positions that are radically different to those that they held before. Although there are benefits from this process in terms of bringing new ideas and knowledge to a business process, the down-side is a loss of knowledge about the process that had gone before.

Previous experiences are not documented, people move on to the next project, those that follow have little knowledge of that which went before and consequently, research and the development of ideas is lost. Many interviewers said they knew of occurrences where people new to a project essentially re-invented the work of the people who had gone before.

**Consistency**: There was a perceived lack of consistency on a number of fronts, including the direction that the organisation was headed in, and external communications. This resulted in a situation where employees would often read about changes to the organisation in newspapers before they would hear about them through official internal communications channels. It was suggested by one interviewee that this situation contributed to cynicism regarding announcements by senior management. An example of this was that during the previous year, senior management had to make three separate statements to employees in the financial services division, that Lend Lease was not going to sell the MLC.
A Lack of Explicit Purpose: As noted in the qualitative overview it is extremely difficult to determine the purpose of Lend Lease, at least in comparison to other organisations such as Hewlett Packard. Several interviewees felt that the lack of a clear purpose contributed to Lend Lease’s knowledge management problems as the business units and even the teams within them became purposeful units when they should have been purposive to the whole. As purposeful units, the sharing of knowledge with their peers was not a priority.

Cultural Differences: This was a two-fold issue. There were significant cultural differences between divisions, created by the acquisition processes described in the historical overview. Secondly there were the cultural differences between countries in which Lend Lease operates. These differences were most acutely felt in countries such as Indonesia, and Malaysia where the socio-economic environment was radically different to that in Australia.

Equality: As noted above, the equality of employee benefits across the globe was an issue that was extremely difficult to address. Employees in Australia receive generous superannuation and employee share ownership. Coupled with a range of other benefits that are specific to the Australia’s legislative environment. Ensuring that employees are treated fairly around the world was important for a range of ethical and operational reasons.

Workshop Results

The key purpose of the workshop was to assess the validity of interpretations arising from the semi structured interviews. The process of the workshop is described in Appendix 1. Through the workshop process the following four issues were identified, and are listed in order of priority,

1. Determining the relevance of information.
2. Need to develop a culture of sharing and learning
3. Globalisation - Cross Cultures
4. Logistics - information systems to deal with the above issues

1. Each of the groups discussed the idea of relevance in some form or other. This ranged from the accessibility of the information, i.e. how usable is it, knowing whether knowledge is appropriate or inappropriate and vice versa. Do people withhold information by accident because they assessed the other persons needs inadequately.
2. The need for the culture to be one that shares information or knowledge. This also covers such things as the purpose of the organisation and whether people will or can overcome cultural barriers to sharing. This issue referred particularly to differences between the business units, i.e. cultural differences between property and financial services.

3. Globalisation; emerged as a significant issue for the organisation. How to leverage the knowledge of all the people overseas that are creating new ways of doing business and cross pollinating those ideas.

4. Logistics; this is basically a question of the information system that can physically make the communication possible. In many ways this issue was a function of the others above. As Lend Lease had grown, each of the different divisions had developed their own IT systems, creating a situation where there were several incompatible systems.
The Global Communicators Network.

The Global Communicator’s Network (GCN) was established to develop a global team of communicators whose role in the organisation would be to:

- develop local/regional communication networks
- feedback on communication issues & needs including global communication vehicles,
- be responsible for the facilitation of regional orientation and global updates,
- facilitate communication of local employee benefits
- understand and model good communication skills,
- raise awareness of the importance of effective business communication

The people involved would become the first point of call in terms of coordinating communication flows throughout the organisation. Once established, the GCN would meet once or twice a year to discuss issues relating to internal and eventually external communications. This also involved evaluating and improving the effectiveness of current global communication vehicles. There were two main phases of this project that can be described.

- Conceptual development and research,
- Implementation of the communicator’s network

The first phase, termed here Conceptual Development and Research involved

- The development of an informed strategy, and
- an audit of current communications vehicles such as Interlink, Videolink, Enewslink etc. (These communications vehicles will be described below)

The audit would provide a clearer understanding of the communication needs of people across the organisation and involved a survey of employees from all areas of the company. The GCN also included the development of a graphics database. The purpose of this database, was to provide a consistent set of images for use by approved employees in submissions to clients and in communications with the press. Examples of graphics that would be included on the database; are pictures of senior executives, recently completed construction projects and brand logos.
The six people involved in the group for Phase 1, were all drawn from the Sydney offices and held communications related positions within the organisation. In particular these people were responsible for the communications vehicles alluded to above. The group also included an external communications consultant.

**Timeline**

The GCN project had been underway for several months prior to becoming a subject of this research, as such, descriptions of the project are taken from the beginning of August, 1997. At this time, the development of the survey that would be sent out was well underway. A timeline of roughly 3 months was planned for finalization of the survey, and return of results.

The quantitative data generated in the communications survey, was further supported by information gathered in regional focus groups. These focus groups were conducted by the nominated ‘Global Communicators’ and composed the first steps of the second phase of the project. Most Global Communicators were nominated by their CEO.

The survey was piloted with the GCN group prior to being sent out to the rest of the organisation. A sample of 10% of the organisation was aimed for. This was achieved via taking 10% of a business unit where possible. A high response rate was expected as the nominated Global Communicators followed up on people who had not completed the survey.

The first meeting of the GCN was held on November 5, 1997. The meeting consisted of a teleconference with three people from the US (2 in New York, 1 in Atlanta). There were 13 people at the Australian end. Several points of view were shared and issues raised at the meeting. The first of these referred to progress within the company during 1997 in regard to communications. Prior to 1997, major announcements regarding acquisitions, changes to the company, opening of new offices etc would often appear in the paper before the employees would find out about it. During the case study the announcement of a proposed merger between the MLC and National Mutual was aired within the company before it went to the press or at least at the same time - something which was greatly appreciated by the employees.

It appeared that through the development of the GCN graphics database there was great potential for the reuse of information and graphics. This reuse probably stretches beyond what people initially thought. For example there was discussion of getting David Higgins speech from the AGM placed

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17 Some business units or operations were not surveyed as they were too small. For example Lend Lease’s Fiji office only has one person.
on the dbase so that managers could refer to it. It was also noted that the dbase would make it possible for people in the US or wherever else who were involved in putting together a proposal to include these pictures as part of the proposal. Sometimes there inclusion is actually compulsory and therefore the logistics of getting the pictures where they need to be when they are needed is of vital importance. The notion of putting all these pictures on a dbase has several benefits in this regard, including the speed with which they can be accessed. Of course the other major benefit is the consistency of the message. The use of this information would be accessed through the network members, therefore maintaining control of the accuracy of the images (i.e. no images of people who had left the organisation.

A second video conference was held on December 4, 1997. Participants in this conference were from the Singapore and UK offices. The presentation was essentially identical to the last one but more low key. The people involved in this conference are more aware of the issues involved in communication due to their current roles. Some of the people involved in the previous conference had little experience with communication issues. The other distinction from the last meeting was that at this one the graphic dbase was actually operational.

A three hour meeting was conducted on December 10, 1997 to review the results of the survey which was conducted into the effectiveness of the current communication vehicles within Lend Lease. Below is a summary of the results of the survey.

Question 1. How Interested and Informed are you?

Responses to this question were a rating corresponding to a particularly category. Some of the categories were:

- My group company objectives & news
- Employee benefits
- Lend Lease Corporate announcements
- Lend Lease Corporate Vision
- Learning and Professional Development

Responses to this question showed that most interest was in personal information. My professional development, my business unit, employee benefits and financial results. There was only moderate interest in news about other groups in the organisation, job opportunities in Lend Lease and negative news.
These results became more interesting when correlated with the level to which people perceived they were informed. With the exception of financials the response was fairly poor. In terms of job opportunities and personal development, the figures were very low. Negative news was extremely low as was news about other groups. These two figures have to be considered however in the context of the fact that people were not as interested in them.

The timeliness of the information gained a mixed response with negative news getting the lowest score. There was no obvious pattern in the responses to this aspect of the question.

Question 2 How do you currently get and how would you prefer to receive this information?

This question was an examination of the different communication vehicles. This information was also interesting in terms of peoples perceptions of what they were getting and the comparative usefulness of the vehicle. Before describing the results of this question it is necessary to give a brief description of each of the communication vehicles that were under study.

**Global Update/Insight:** Are events held to announce the yearly and half-yearly financial results to employees. Historically a key aspect of this information is the employee profit share figures. The events also involve presentations from senior executives and board members with regard to the organisation's progress and strategic direction. Often the content of the presentations is directed at answering employee questions with regard to particular organisational decisions and the progress of important initiatives. It also provides senior managers with the opportunity to publicly thank employees for their contribution over the previous year. Well over a thousand employees usually attend these functions, offering the opportunity for socialising after the official ceremony has finished.

**Interlink:** at the time of the case study, Interlink was a monthly magazine/newsletter circulated to all full-time employees of Lend Lease. Its content was made up of recent achievements and announcements within the group. It also included articles from time to time on the history of Lend Lease, the corporate values etc.

**Newslink Noticeboard:** is basically a noticeboard used to advertise job vacancies within the group

**Enewslink:** is an electronic newsletter circulated via email to all employees weekly. The content is similar to Interlink, but more concise. Enewslinks are usually no longer than two A4 pages when printed out.

**Videolink:** provides similar information to Interlink in a video format. Videolink was circulated to employees on a quarterly basis with the tapes returned for recycling once they had been watched.
Several managers would call team meetings so that the team could sit down and watch the video together, others would take them home to watch.

**Annual Report:** The last communication vehicle to be described here is the annual report. This document is the same for all listed companies and provides information for shareholders and the public regarding the companies operations over the previous year.

The survey results for the above communication vehicles are described below.

**Global Update**
This received a fairly good review with high scores on nearly all categories. The interesting area in which it fell down was whether it gave the full picture. Only 40% of respondents believed this aspect to be good or excellent. The difficulty with this result is that it is unknown what people consider to be the full picture.

Another interesting aspect of these results related to the perceived value of Global Update. Historically one of the main reasons for holding the event to allow people to network with others from different parts of the organisation. The survey results would suggest that people don't network there and in fact stay with their own group company, as such these events were perceived more like a party than a networking exercise by some people.

**Interlink:** also received a fairly good response, however, again the question regarding the full picture received a low response. Focus group discussion relating to this particular vehicle revealed that some people gave Interlink to clients as a way of describing the organisation

**Videolink** received a low rating as a useful communication vehicle (38%). This probably had more to do with problems of access to a video. The fact that in several group companies the video is shown on mass to the employees suggest that it is not useless in all circumstances but the problems of diversity in the group are probably more to do with its low result than any other factor.

**Newslink Noticeboard:** This also received a low response (27% found it a useful communication vehicle) and there is a good reason or this. Discussion within the focus groups revealed at the meeting suggested that in some business units people were afraid to be seen reading the noticeboard because they didn't want their superior to see that they could be interested in going elsewhere. It should also be noted that job vacancies scored low in the interest area of the survey, and therefore like negative news etc, if people aren't looking for it they probably won't use the vehicle which supplies it.
Enewslink: This received very high scores in all areas except the full picture question, where it scored low. Overall this was the most highly rated communication vehicle with 68% of respondents finding it a useful communication vehicle.

Annual report: This was interesting because it was the only vehicle in the survey which received a relatively high response for 'gives the full picture' (53%). A point that was raised with regard to this, was that the annual report is legally bound to provide certain information and therefore employees may feel that there is not so much hidden in the report.

It should also be noted that the results for this section were not as clear as in the first section on interest. Responses were fairly evenly spread between poor satisfactory and excellent in all the cases except for some of the conclusions listed above. As such the conclusions that can be drawn from these are not as obvious because there are not any trends in terms of what people want from the vehicles.

Question 3 – Current and Preferred Sources of Information

For most types of information, the preferred source was the CEO or manager. In particular for group company objectives (60%), group wide negative news (40%), career planning (65%) and learning and professional development. People wanted face to face contact more than they were getting. The idea of the soap box lecture by the Managing Director was very popular. It should be noted that this was a regular practice of Dick Dusseldorp when the organisation was much smaller.

Information received via the grapevine was perceived to be considerable, particularly with regard to group company objectives (28%), news about other group companies (26%) and in particular negative news (37%). Although informal communication channels are efficient for some forms of information, for these categories respondents preferred more official methods. For the same categories, the grapevine scored between 2 and 5% as the preferred source of the information.

For every form of information besides things relating to vision, objectives and values, the intranet was the preferred source and therefore it would appear that upon its establishment will be well used.

Following the receipt of the survey results, the GCN made changes to some of the communication vehicles. Videolink and the Newslink Noticeboard were dropped. Interlink changed format considerably to become a quarterly magazine, the focus of which was a mix of internal and external
communication. This had the effect that there was less doubling up of information between Interlink and Enewslink and the magazine was appropriate for circulation to external clients.

The GCN network in terms of the people involved continues to meet as planned, providing a more controlled channel of information and less repetition of functions. People responsible for communications within each of the business unit areas are involved in the group with the result that both external and internal communications about group activities and achievements are released in a consistent and logical manner.

During the case study, one of these business unit communications groups also became a subject of the research – The Retail Financial Services (RFS) Communications group.

**Retail Financial Services (RFS) Communications Group**

The purpose of this project group was to develop and implement a communication strategy that facilitated two way communication between all staff within RFS and allow rapid response to staff feedback. It was also involved in a reworking of the REACH vision for MLC.

Initially the project involved approximately twenty people, each person acting as a representative of their particular business unit or functional team within MLC. Unfortunately not all the parts of Financial Services were represented, a point highlighted by one of the participants in a memo to the project manager for the group.

"I must say that I am still concerned that the group is stacked with Funds Management people. If it is your and [a senior executive]'s desire to have a more representative group across RFS, then I would suggest that [the senior executive] inform his fellow CEOs/GMs at their next weekly gathering that this particular initiative is taking place and that they are welcome to nominate people as representatives of their business units" (RFS memo, 4/7/1997)

Apparently some of the business units within MLC were deemed to be too different in their operations to have benefited from participation in the group. The process that was proposed for the group was highly participative in nature and relied on the input and ideas of MLC employees, communicated to the group via their particular representative.
The 20 or so members of the group split into a number of sub-groups to look at specific issues. This involved undertaking an informal survey of their work colleagues to determine a range of communication issues that the group would then work on to address. The categories for these issues were very similar to the GCN’s, i.e. what type of information do you need, how would you prefer to receive your information etc. The results of these surveys were presented to the group at the weekly meetings. The results were then compiled by the project manager and sent out to the group participants.

The next step in the process was to involve the development of one page communication plans for each of the business units represented by the group. These plans were developed by the business unit representatives as a synthesis of their colleagues ideas and presented to their respective CEOs in an attempt to gain their commitment to the initiative. At the same time one of the group members was preparing a rework of the REACH vision statement for MLC.

The rework involved a more detailed expansion of the words in the slogan, to include characteristics of people who were acting in line with the vision. In early versions of the rework some of the words had been changed, i.e. Resolution to Results Oriented. This particular change did not go ahead, as it was considered that,

“...by changing the words we may muddy the water, i.e. people know that REACH is Resolution, Empathy, Accuracy, Convenience, Honesty – if we change that to Results Oriented, does that still mean Resolution?” (Memo, 3/7/1997)

Unlike the GCN described above, this project was short lived, lasting for approximately 2 months. The reasons for the discontinuity of the project related mostly to the departure of the project manager from the organisation. The project manager had been working part-time up until this point, with the other participants working on the group in their spare time and consequently on top of their existing work commitments. For the project to continue appointment of a new project manager was required to continue to organise and coordinate the people involved – that appointment did not occur. Nor would it appear other senior executives considered the project to be of enough importance to support the project in other ways.

The group disbanded and the communication issues that had been discussed within it were picked up about two months later by an individual working in another part of financial services. This individual, due to her role supporting a senior executive, had her responsibilities extended to include
these communication issues. She subsequently became a member of the GCN and therefore acted as the centralised point for all communication requirements within Financial services.

As the case study continued, it became clear that the establishment and rapid discontinuity of groups like the RFS Communications group, was common place within Lend Lease. The need to get the ‘buy-in’ of key decision-makers was central to the survival of any initiative within the organisation.

Other business units, had very different approaches to the knowledge management issue. The property services group, integrated knowledge management as a part of its overall BPR project.

**Property Services**

Property Services, at the time of the case study had already begun a significant BPR change initiative, known as ‘Excalibur’. The changes involved in this process are the greatest that Civil and Civic has experienced at any point in its 40 year history. It involves a total rethink of the way in which the business operates, the markets in which it competes and the services it offers. One of the key drivers behind the change process, is the construction industry itself. In Australia the construction industry is mature and consequently the ability to differentiate the service offering of one construction firm from another is vitally important in terms of maintaining margins and consequently profitability.

A full description of the changes involved in Excalibur are beyond the scope of this thesis and as such focus will be placed on the knowledge management elements of the project. In addressing knowledge management, Civil and Civic appointed its own Chief Knowledge Officer to develop and implement a knowledge management framework. The initial focus for the research was in 6 key areas;

1. **Structure & leadership:** this involved defining the types of organisational structure elements that would support learning within the organisation. This may include Centres of Excellence for example, and the resources required to implement this structure and the Human Resource Management implications.

2. **Culture:** This included examination of the vision for Civil and Civic, making sure that it included the importance of learning and knowledge management. Definition of values and behaviours to support the vision. Understanding of the skills required. Development of recommendations in terms of incentives, recruitment practices and training programs.
3. Policies and Procedures: Outlines of work practices and procedures that promote organisational learning and creation of knowledge. The development of mechanisms to make tacit knowledge explicit and explicit knowledge organisational. Define process and procedures to manage different types of knowledge.

4. Knowledge Content Map: The development of a map of the different forms and sources of knowledge within the organisation. This would involve liaison with the other Excalibur teams and allow for the development of a structure for knowledge along multiple dimensions such as:
   - Importance
   - Sources
   - Users
   - Knowledge Types
   - Disciplines

5. Infrastructure: This involves determination of technology needed to support knowledge management and learning. This included the network, hardware and software applications. It also includes physical infrastructure such as the office layout. Examination of administration systems for profit reporting etc.

6. Measurement: This involves determination of how to measure knowledge management performance. The focus here is not on the individual performance of employees but the knowledge management system in general. How can it be evaluated in order to improve it?

The Excalibur initiative is still underway at the time of writing and implementation of the ideas described above is only in its very early stages. At the time of the case study, little to no implementation of knowledge management initiatives had taken place. Over the course of the case study the focus of the above gradually narrowed, so as not to include HR issues such as remuneration and performance management. The main focus was placed on the establishment of the IT architecture within Civil and Civic. The CKO's definition of knowledge was "information that is useful or used". It was considered at the time of the case study that without first establishing the IT architecture, people within the business unit would quickly loose interest in the initiative, dismissing knowledge management as yet another management fad. Following completion of this process, the HR and social issues involved with knowledge management would become the focus.

**PeopleLink**

PeopleLink was established as a global people database. Its key purpose was to centralize information on all Lend Lease employees into an easily accessible form. The types of information included on the database were split into two main forms, non-sensitive information which included;
- Name and contact details
- Qualifications
- Key skills
- Job role and location

This information was to be maintained by the employee, and in essence provided them with an online CV that could be viewed by people throughout the organisation. A sensitive section is also included on the database that can only be accessed for administration reasons. This section includes information on salary levels for example.

The database could be searched from a range of perspectives including location, skills, and qualifications and of course name. The idea was that this would provide employees easier access to the identification of where skills and people with similar interests were on a global basis. From an administrative point of view it would also provide statistical reporting on people information and the availability of data for recruitment and selection, performance management, career planning, succession planning and resource planning purposes.

PeopleLink was a LotusNotes based database that in time would become web based in order to provide compatibility with the Lend Lease Intranet described below.

**IT Mastery, Awareness & Collaboration/Executive Bluebook/Executive IT Enablement/Executive IT Education**

It is difficult to describe this project in the same way as those that have been described above, as the nature of the project changed radically over the course of the case study, with a number of other projects resulting. The IT Mastery project, targeted the top executives within the organisation and their senior managers. The key goals for the project were to;

- Increase executive collaboration across Lend Lease businesses
- Enable knowledge sharing
- Develop work styles which will achieve Lend Lease’s current and future goals
- Develop skills and awareness of technology and information among Lend Lease’s leaders

The initial focus on the organisation’s top managers remained throughout most of the projects that emerged and accounted for roughly 50 people. The first clearly definable project to emerge from this focus, was the Executive Bluebook. The Executive Bluebook was a LotusNotes based discussion database where board and strategy papers prepared by the senior executives in the
organisation could be placed for review. This at least provided the basis from which CEO’s and senior managers from different parts of the organisation could become aware of what other parts of the business were planning and doing. This was based on a long-term view towards more collaborative business planning across the group. Business planning up this point had be undertaken and reviewed within the silos of the different divisions.

Access to the database was limited to the top executives targeted by the project, which was important for reasons of confidentiality. Papers placed on the database should, in theory, be living documents that show the formative ideas of the senior managers regarding their business. Although it could be argued that participative development of strategy through the inclusion of staff further down in the organisation would be of benefit, the Bluebook was not the venue for such discussions. The broadcast of these papers across the group would have resulted in rumors regarding the potential sale of parts of the group or changes in strategic direction. The Bluebook was a thinking space for executives not a billboard for the broadcast of their thoughts.

To support the development of the Bluebook, the IT Enablement of the executive team was another project that emerged out of the Top X project, as it had become known. This essentially involved making sure that each of the executives involved had access to the latest IT equipment, and was provided with training on how to use it. It is difficult to assess, however, whether or not the original idea of executive collaboration actually occurred through these projects, or whether the project became more of an IT based initiative, that in time will lead to the collaboration that was initially envisaged.

To this point centralised control of Lend Lease’s IT systems had not occurred. This began to change with the next two initiatives.

**IT Executive Committee/Lend Lease Intranet**

The establishment of an IT Executive Committee and a Lend Lease Intranet, did not effectively occur until after the case study period had ended. These developments are, however, extremely significant in terms of the way in which Lend Lease is developing a capability to manage knowledge.

An IT director was appointed in early 1998, whose primary role was to address the technology issues in relation to the IT network within Lend Lease. To help facilitate this, an IT Executive Committee (ITEC) was established, made up of a combination of senior managers, IT consultants and experts, and IT managers from across the group. The role of the ITEC was to determine a set of standards
and protocols for Lend Lease's IT system. The implementation of these standards would then, over time, provide a consistent IT platform for the group.

The protocols and standards determined by the ITEC related to such things as the format of databases i.e. LotusNotes based, the type of computers used, i.e. IBM compatible or Macintosh based and the codes of practice for the use of email and other computer based communications.

These changes provided the basis from which an organisation wide Intranet could be established. The Lend Lease Intranet, known as the hive, provided for the overall centralization of information into a commonly accessible format. Overtime, it was perceived that most databases would be accessible through this system, providing people from across different business units easy access to information on other parts of the company. At the time of writing the Hive had only been available for a matter of weeks and the number of databases that could be accessed through it relatively small. Basically all databases require password access of some form, meaning that different people will have access to different levels of information. The impact of this on the organisation is as yet unknown.

There were a number of other database or IT based initiatives that occurred during the case study period. Most related to specific business functions and were specific to the different business units. These databases all had essentially a similar effect in terms of centralizing the information being generated in the business units into easily accessible centers. There is little value in discussing all of these initiatives as their effect on Lend Lease's overall development will be summarized in Chapter 6.

**JV KnowledgeBase**

One exception was the development of a JV KnowledgeBase, the purpose of which was originally driven by a risk and compliance study of the way in which joint ventures were undertaken across the group. At the time of the case study Lend Lease was involved in over 50 joint venture and alliance relationships. The purpose of the database was to provide people involved in JVs with a basic process to follow based upon the experience of people who had already been involved in numerous joint ventures and a study of world best practice.

Following initial establishment of the database in early 1998, the project is beginning to broaden in scope to the point where it may involve the establishment of a community of practice around the
process of joint venturing. At the time of writing, however, this development had not yet taken place.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
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