

**ENVIRONMENTAL DISTURBANCE AS A CATALYST FOR
IMPLEMENTATION OF IC PRACTICE**

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Abstract

Purpose of this paper: The aim of this paper is to discuss using a case study approach, how an environmental change for an organisation can be a catalyst for the implementation of intellectual capital (IC) practice. In particular, it uses Laughlin's (1991) 'colonizing' model of organisational change to frame the discussion of transforming the accounting of IC.

Design/methodology/approach: This paper presents a case study of change in an Australian public sector organisation, being the New South Wales Department of Lands (Lands), which has implemented IC practice both internally and externally.

Findings: In the case of Lands, the impending retirements of the 'baby boomer' generation is an environmental disturbance and was a catalyst that allowed for the implementation of IC practice. Furthermore, Lands' IC practices have led to an accounting of IC, especially its human capital.

Research limitations/implications: This case study is limited to the presentation of findings of a phenomenon within a particular organisation within the Australian public sector context. In addition other forces may also have had an effect if not for the presence of the 'ageing workforce' disturbance.

Originality/value of paper: The paper discusses a gap in the IC literature which investigates how organisations implement IC practices and the impact of these practices on the organisation. In addition it discusses IC from the public sector perspective.

Keywords: Intellectual capital, organisational change, strategic management, ageing workforce

Paper type: Case study

1. Introduction

The concept of intellectual capital (IC) has gained much interest in business and academic circles as there is wide recognition that knowledge is becoming more important to organisations and technology has allowed for greater dissemination of knowledge (Meritum Project 2002). In this paper we identify that there is a gap in the IC literature in relation to understanding the forces that lead an organisation to implement IC practices.

To address this gap, we present a case study of the New South Wales Department of Lands (Lands) in relation to an environmental disturbance. Laughlin's (1991) models of organisational change are used as the framework for this case study. The research that the authors and others have been conducting at Lands has examined methodological and research issues (Boedker, Guthrie et al. 2005), the reasons for the take-up of IC (Boedker, Guthrie et al. 2005) and how the idea of IC practice started to take hold (Cuganesan, Guthrie et al. 2006). Thus, there exists a gap for discussing the environmental force that was seen to be a catalyst for the implementation of IC practices.

Lands' three main 'management challenges' in relation to IC practices are identified as managing employee demographics; service delivery; and external relationships (NSW Department of Lands 2005). Within the challenge of managing employee demographics the issue of the ageing of the workforce has been identified as an important management challenge. It was seen by the management of Lands as the key issue and was the catalyst that allowed for the implementation of IC practices. For the purpose of this paper, IC practices are defined as management practices that enable

the measurement, management and reporting of an organisation's IC. The aim of this paper is to discuss how an environmental disturbance "strategic management challenge" for Lands can be a catalyst for the implementation of IC practices.

To present this discussion the paper is divided into five more sections. In section 2, a literature review is presented to identify the gap surrounding the issue of the forces that are the catalysts for the implementation of IC practice. This is followed in section 3 by an explanation of the case study research method employed. Section 4 discusses Laughlin's (1991) model of organisation and the 'colonization' change model which provides an analytical framework for the paper. Section 5 applies the colonization model of change as espoused by Laughlin to argue how the environmental disturbance of an ageing workforce allowed Lands to implement IC practices, especially human capital. This is followed by the last section which presents a brief conclusion that summarises this paper's findings, identifies the research limitations and discusses future research opportunities.

2. Intellectual Capital

The world's economic activities have shifted from those driven by the use of tangible assets such as plant, equipment and real estate to an economy driven by the use of intangible resources such as knowledge, technology, core competencies and innovation (Meritum Project 2002). While the definition of the knowledge based economy is ambiguous there are several structural changes that have been occurring, these are identified as follows (Meritum Project 2002):

- Knowledge is being recognised as a commodity and is being utilised in transactions;
- The connectivity between knowledge agents has increased remarkably; and

- Information and Communications Technology (ICT) has allowed for greater creation and diffusion of knowledge and thus the network of knowledge agents has expanded globally.

At an organisational level, rapid technological change, increasingly sophisticated customers and the importance of innovation has highlighted the importance of IC in comparison to physical and financial capital (Petty and Guthrie 2000; Ordóñez de Pablos 2002).

As an indication of the rapid growth in the field, a recent review by Sveiby (2004) identifies 28 different models for the management, measurement and reporting of IC. Of the available IC reporting frameworks, one of the most advanced comprises the efforts of the Danish Ministry of Science, Technology and Innovation (DMSTI), which has released guidelines for the production of IC statements (Mouritsen, Bukh et al. 2003). Comparable efforts have also been made throughout the European Union with the MERITUM research project which, among other things, sought to produce guidelines for managing and reporting on intangibles (Meritum Project 2002). In Australia draft guidelines have also been established for the management and reporting of IC by way of extended performance accounts (Boedker 2005).

In the models and frameworks identified above, IC is often represented as the 'intangible wealth' of an organisation and is generally comprised of the elements of internal, external and human capital. This is represented in Table I along with examples of the components of these elements. This tri-partite model of IC is well accepted in the literature even though there may be different names for the elements, for example internal versus structural capital or external versus relational capital (Guthrie and Petty 2000).

[Take in Table I]

Additionally, researchers in the field of IC have been interested in the substance of the disclosure that emanates from annual reports of listed companies (Guthrie, Petty et al. 2004). This is because the annual report has become a focal point in external IC disclosure as evidenced by the proliferation of frameworks that use the annual report as an appropriate vehicle for the public disclosure of IC (Edvinsson 1997; Meritum Project 2002; Mouritsen, Bukh et al. 2003).

Contrasting with the private sector orientation of the previous studies, Collier (2001) explores IC utilisation and external reporting in the public sector in an examination of the UK Police Service. Collier (2001) links IC reporting to discussions of its utilisation across a variety of media. These include formal police reports where IC was represented only implicitly through descriptions of human resource and technology initiatives; cost reports including IC information such as training expenditure; performance reporting where the benefits of IC were difficult to assess; and general media reports of IC failure amongst the police forces. The author also identifies drivers of this reporting, such as the importance of achieving external recognition of efforts to improve human capital, the drive towards greater accountability over public resources and the need to demonstrate the 'invisible' benefits of IC investments such as avoiding poor publicity. However, the extent to which different IC components are reported is not systematically analysed.

From an Australian public sector perspective there has been a noticeable lack of discussion of IC in the academic literature. Alternately there has been some evidence

as seen in some government department annual reports (NSW Department of Lands 2004) and white papers (Department of Industry Science and Resources 2001) that the importance of IC has filtered through to the public sector. Thus a gap exists in the academic literature about why public sector organisations measure, manage and report on IC.

What was also found lacking in our review of the IC literature was a discussion of the catalyst for an organisation to begin to implement IC practices, although Marr *et al.*, (2003) do partly address this by examining different reasons that organisations have used to justify their foray into IC practice. The literature that deals with implementation generally discusses how to operationalise a particular IC framework (see Bounfour 2003; Andriessen 2004; Jacobsen, Hofman-Bang *et al.* 2005) or how IC practices were implemented at a particular organisation (see Chatzkel 2000; Peppard and Rylander 2001). So, while the advent of the knowledge economy is espoused as a reason for the interest in IC practices in management and academic communities, it is not sufficient to explain the forces at work that allow an organisation to implement IC practices.

The Lands research team have so far produced three articles that have added to the literature on IC. The first article (Boedker, Guthrie *et al.* 2005) traced the techniques and research methods developed and deployed by the project team during an investigation of a client organisation's IC practices. This article highlighted the benefits of adopting an integrated approach to investigating IC and proposed the IC Value Creation (ICVC) framework as an analytical model for extending the breadth and depth of existing research methods into IC practices.

The second article (Boedker, Guthrie et al. 2005) outlined the reasons for the take-up of IC and discussed the disclosure of IC information, especially human capital information, in Lands' annual reports. It contrasted and compared the Lands' internal IC management issues and practices with its external ICR practices. The paper demonstrated an inconsistency between internal IC management issues and practices and external ICR practices. It showed that strategically important information about Lands' management challenges, knowledge resources, knowledge management activities and IC indicators was not disclosed to external stakeholders in the organisation's annual reports.

The third article (Cuganesan, Guthrie et al. 2006) used Actor Network Theory (ANT) to examine how an IC accounting discourse was constructed in Lands and the conditions of possibility that enabled this to shape material practices and overcome alternative and rival organisational rhetoric. The paper connected global discourses that constructed a 'new' IC statement practice as desirable and worthy of implementation to the specific organisational actors that seek to mobilise these forms of accounting in the pursuance of their interests.

Thus, an opportunity exists to build upon these research findings and to explore the environmental force, at an organisational level, that is seen to be a catalyst for the implementation of IC practices.

3. Research Method

In this section our research method will be discussed from two perspectives. First, the use and justification of the case study as a method of enquiry; and second the use of semi-structured interviews as our primary source of empirical data.

The case study is seen as an appropriate method for qualitative research as it is a familiar approach that has a long tradition of use among many academic disciplines (Creswell 1998) and has applicability for the study of management accounting processes (Scapens 1990). Case studies are a bounded system consisting of a phenomenon related to a specific time and place (Creswell 1998). In this paper the bounding consists of the phenomenon being studied which is the implementation of IC practices; the place is Lands; and the time is from July 2004 to September 2006.

The advantage of using of the case study method is that it is able to explore and understand a phenomenon in a particular context, it has flexibility as to the limits within which the study can be directed and that different methods of collecting data can be used, including but not limited to, interviews, focus groups, internal documentation, external documentation, participant observations and direct observations (Creswell 1998; Collis and Hussey 2003; Yin 2003). The use of multiple methods of data collection offers researchers a rich source of data from real settings (Yin 2003). In the case of Lands the researchers were given full access to both internal and external documents, access to organisational actors, permission to attend meetings of their choosing and access to the corridors of the organisation to allow for observations of interactions between actors.

The main source of empirical data for this study is based upon the analysis of semi-structured interviews. The use of interviews in case studies is seen as an important if not the primary method by which data is collected for case studies (Yin 2003) and is a primary method which is utilised across the spectrum of qualitative research methods (Creswell 1998). Yin (2003) advocates the use of two interview styles - open ended and focused interviews. Focused interviews, also known as semi-structured interviews, were chosen as the main source of data collection as they allow for the use of a specific set of questions aimed at why a particular process occurred. Semi-structured interviews are an interpretivist approach to research. They are based on the assumption that:

“the actions of people, individually and collectively, are based on their constructions of the nature of the world in which they operate” (Dunford 2004).

Therefore, the meanings people attribute to situations determine the actions they take. Thus the semi-structured interviews used in this research were designed (see Patton 2002) to elicit insights into how the organisation and its members were impacted by the introduction of IC practices. Doing so provided a more dynamic and future-oriented perspective on the impact of IC measurement management and reporting practices from ‘inside’ the organisation.

As indicated above, the authors have been part of a research group that has studied IC at Lands since 2004 and this has involved two distinct stages. The first stage in 2004 identified the gaps between the perceived IC-based management challenges and how these were reported at Lands. The second stage commenced in 2005 and investigated

the take up of IC practice and examined how this impacted the organisation. Table II presents a summary of the data sources for both stages.

[Take in Table II here]

In the second stage the primary source of information was the semi-structured interviews conducted with senior Lands managers. In total, 15 executive and senior managers were interviewed in 14 separate interviews. The interviewees were chosen because they represented as closely as possible the same group of people who were interviewed in the first stage. The managers included the Director General (DG), six managers who were one level below the DG and eight managers who were two levels below. As a result of investigation by the researchers and Lands a number of managerial challenges were identified which are aligned with the elements of IC. These management challenges are summarised as follows (NSW Department of Lands 2005):

- Employee Demographics (Human Capital) – identifying, sharing and retaining knowledge; employee attitudes and motivations; learning and development and innovation;
- Service Delivery (Internal Capital) – developing cross-functional processes; agile organisational structures; integrated information technology systems; and a dynamic knowledge culture; and
- External Relationships (External Capital) – improving relationships with the community, other agencies and organisations; multi-channel distribution strategies; customer focus and responsiveness and our corporate image and identity.

As a result of investigating these management challenges one element, that is ‘an aging workforce’, was singled out as having a major influence on the implementation of IC practice at Lands.

4. Laughlin’s Models of Change

In order to frame the discussion further Laughlin’s (1991) models of ‘organisational change’ are used. These models are designed to provide a framework to help understand the process of organisational change so as to capture the dynamics of change (Laughlin 1991) and have been used frequently in this regard in the literature on change as it applies to accounting (Laughlin, Broadbent et al. 1994; Richardson, Cullen et al. 1996; Mobus 2000; Larrinaga-Gonzalez, Carrasco-Fenech et al. 2001; Haldma 2004). Laughlin’s (1991) models of change are built on the premise that change is best understood by analysing the path that an environment disturbance (jolt or kick) progresses through an organisation and appears to be a useful tool to help understand the process of change that organisations undergo as a result of environmental disturbances. The models presented by Laughlin are, as he describes them, skeletal in nature requiring the empirical flesh to be added to them so that they can become “whole beings” (Laughlin 1991). The case of Lands is the empirical flesh that builds on one of these models, that is the ‘colonization’ model of organisational change. This approach is applicable to the understanding of the systems which account for IC practices as these can be seen as systems which account for the intangible elements of an organisation. Laughlin (1987) has the:

“... view that accounting systems in organisational contexts are more than technical phenomena and that to understand and change these technical elements, the social roots must also be both understood and changed.”

In order to frame this discussion two sub-sections are presented. First, Laughlin's model of organisation is discussed and second the 'colonization' model of change is explored. This is necessary so that we understand what is meant by 'organisation' in the context of this paper, as well as providing the framework for analysing IC practices at Lands.

4.1. An organisation model

Laughlin (1991) presents and describes a model of organisation consisting of a combination of three major elements: interpretive schemes, design archetypes and sub-systems. A characteristic of the model is that organisations consist of tangible and intangible elements. The sub-systems of the organisation are seen as the tangible elements and examples of these elements are people, buildings and plant and equipment, of which there is impartial agreement as to their make-up. The intangible elements consist of the design archetype and the interpretive schemes both of which are seen to give "direction, meaning, significance and interconnection" to the sub-systems (Laughlin 1991). These elements are created and sustained by past and present members of the organisation.

[Take in Figure 1 here]

The design archetype is distinct from interpretive schemes as it consists of the management systems and structures that have been formed to implement the underlying values of the organisation (Greenwood and Hinings 1988). Such structures give organisational members reasons why the organisation is constituted internally and how this structure helps deliver on the espoused organisational values. In essence

they are the glue that combines tangible sub-systems with organisational values (Laughlin 1991).

In contrast, the interpretive schemes of an organisation are the cognitive elements of an organisation which guide behaviour and give the organisation members a common purpose and thus a coherence of the organisation. These interpretive schemes have been classified by Laughlin (1991) in three nested levels although the boundaries of these levels are considered ambiguous. Beliefs, values and norms give direction to organisational members, the mission or purpose guides the specific functions of the organisation, while the metarules can be seen as giving guidance to the organisations' participation in society (Laughlin 1991).

Also in this model is the concept of balance and coherence. According to the model presented above there is a state of dynamic balance and coherence within an organisation at any point in time even though there may be some conflict or disagreement in the organisation about the composition of the three elements (Laughlin 1991). This state of dynamic balance is desired and is maintained as a form of organisational inertia until such time that an environmental disturbance destabilises the organisation to an extent that change processes take place. This time of change is a schizoid state and is not permanently desirable. This change takes place with the view of restabilising the organisation to a level of dynamic balance and coherence that allows the organisation to once again become 'inert' (Laughlin 1991). Thus it is now desirable to examine a framework that describes how a pathway of change takes place and this is presented next.

4.2. *The ‘colonization model’ of change*

Utilising the model of organisations presented in the previous section Laughlin outlines four models of organisational change. These are identified as represented as ‘rebuttal’, ‘reorientation’, ‘colonization’ and ‘evolution’. It is claimed by Laughlin (1991: 222) that these four models provide “a powerful heuristic device for clarifying the nature of any change pathway”.

As espoused earlier the models require some empirical flesh so that they can provide a rich understanding of how organisational change has occurred in a particular context. But here the question begs of which models can be applied to a particular setting. Using these models this sub-section presents our argument for utilising the ‘colonization’ models of organisational change as the analytical framework for this paper. This is considered from two aspects. First, we examine the models from the depth of change they describe and second, from the likelihood that a specific model of change is possible.

From a depth of change perspective the ‘rebuttal’ and ‘reorientation’ models are considered to be morphostatic or first order models of change in that they do not advocate that the interpretive schemes of the organisation will change in response to environmental disturbances (Laughlin 1991). ‘Colonization’ and ‘evolution’ are considered to be morphogenetic or second order models of change as in these instances there is a change in all three elements of the organisation. Morphogenetic change thus has a greater impact on the organisation as it effects the entire organisation, while morphostatic change is superficial as it does not penetrate the

depths of the organisation (Laughlin 1991). As Larrinaga-Gonzalez *et al.* (2001) espouse:

“...it is only through a modification of the interpretive schemes that authentic change can happen, an alteration that penetrates the organizational code in such a way that all future generations will acquire and reflect that change.”

Laughlin (1991) espouses that while the ‘rebuttal’ and ‘evolution’ models are in theory possible and desirable, they are in practice not as likely to be found as the ‘reorientation’ or ‘colonization’ models. This is because ‘rebuttal’ is difficult to design and maintain owing to the fact that organisations are unlikely to be unchanging and, ‘evolution’ is difficult because organisations tend not to seek voluntary change in their interpretive schemes as they seek to avoid the trauma involved in such a change (Laughlin 1991). Thus, as stated above, morphostatic change is not as interesting as it is not seen as authentic change; thus, the ‘colonization’ model of change is used as the skeleton on which we hang our empirical flesh. This is so that we can determine whether IC practice has penetrated the genetic code of the organisation and has transformed the way that Lands accounts for its IC now and into the future.

The model of change that Laughlin (1991) terms ‘colonization’ is represented in Figure 2 below. The diagram shows the path of an environmental disturbance that not only changes the organisation’s design archetype and sub-systems, but also changes the interpretive schemes of the organisation. This change results in a ‘new’ philosophy that underpins the constitution of the organisation and this change can be considered revolutionary in nature (see also Dunphy and Stace 1988). In this model change is forced upon the organisation rather than being consensual in nature and this

change is led by a small group of people as a result of their recognition of an environmental disturbance. Other organisational members are required to accept these changes, even if it is with some reluctance, or they must choose to leave the organisation (Laughlin 1991).

[Take in Figure 2 here]

The above presented the framework to be used in our discussion of change at Lands, and the following section examines the ‘colonization’ of Lands as embodied by IC practice.

5. Colonization of Lands – IC in Practice

This section focuses on the management challenge of ‘managing an ageing workforce’ and to understand how this was seen as an ‘environmental disturbance’. Three preconditions to ‘colonization’ are discussed: the establishment of an ‘environmental’ disturbance; identification of change in the design archetypes and sub-systems; and to finalise the argument we identify change in the interpretive schemes. First, in 5.1 the context of the ageing workforce as ‘environmental disturbance’ from a macro and Lands perspective is discussed. Second, in 5.2 a discussion on how IC has penetrated Lands causing changes to the design archetypes and sub-systems is presented. Last, section 5.3 details how IC is helping to change the interpretive schemes of the organisation thus effecting ‘colonization change’ at Lands.

5.1. *An ageing workforce as an environmental disturbance*

The economies of many industrialised nations are beginning to feel the effects of the reduced participation of the 'baby boomer' generation in the workforce and the possible effects that this may have on organisations and the economy in general (Australian Public Service Commission 2003; Gandossy and Efron 2004; Kiyonaga 2004). There is a perceived risk that this group will leave with tacit knowledge and skills which are valid and valuable to the organisation. Thus, the issue of an 'ageing workforce' is becoming increasingly important to many organisations as the 'baby boomer' segment of their employee base begins to retire.

Many sectors of the economy, government in particular, have experienced the effects of downsizing and employment freezes (Kiyonaga 2004), therefore not allowing for younger workers to take their place in organisations. Australia has not been any different to the rest of the world in this regard (Australian Public Service Commission 2003). Thus, as the workforce begins to retire, their replacements are hard to find and the primary cause of this is falling birth rates in industrialised nations (Green 2003; Brockbank and Ulrich 2005; Geissler, Herrmann et al. 2005), many of which have been well below natural replacement levels for the past few decades (Larwood, Rodkin et al. 2001).

The 'ageing of the workforce' is a problem for managers of public, private and third-sector organisations. Governments and organisations have responded in several ways. These include increasing the retirement age, modifying wage systems (Sasajima 1993), increasing immigration (Betts 2006), financial incentives to delay retirement, improvements to physical and emotional health (Brockbank and Ulrich 2005), allowing work beyond retirement age (Shannon and Grierson 2004), re-skilling older

workers (Green 2003) and programs for hiring mature workers (Westpac Banking Corporation 2005).

In Australia, the Australian Public Service (APS) has been impacted, as evidenced by a Management Advisory Commission (MAC) report on organisational renewal and the challenge of building ongoing capability with the APS workforce (Australian Public Service Commission 2003). The report “reviewed the broad demographic shifts in the APS and their implications for organisational renewal” and identified two main issues for particular consideration.” The first was: What were the implications of the ageing profile on the APS, including the resignation and retirement patterns of mature-aged workers and the impact of current superannuation arrangements? The second was: What were the career intentions and patterns of new graduate entrants and their implications for workforce planning? As a result of this report it was identified that, while about 23% of its workforce was to retire in the next five years (by 2008), this did not present a crisis, but rather presented a challenge that would require active management.

The research site that provides the empirical flesh for this paper is Lands, an APS organisation employing approximately 1500 people. The organisation was established in April 2003 and consists of the Land and Property Information Division (LPI), Crown Lands Division, Soil Services Division and the Office of Rural Affairs. The department also provides administrative support to the Board of Surveying and Spatial Information of New South Wales and to the Geographical Names Boards. In addition Lands also has a number of areas that provide corporate support to the three divisions (NSW Department of Lands 2004). Lands is no different to many APS

organisations as they too are experiencing the effects of an ageing population of workers. Indeed, in 2005 Lands concluded that 44% of their workforce was eligible for retirement within the next ten years (NSW Department of Lands 2005). As with other APS organisations facing the same challenge the major fear is that as these workers begin to leave the organisation they will leave with unrecorded tacit knowledge which is still valid and valuable to the organisation (NSW Department of Lands 2005).

From the perspective of this paper this ‘management challenge’ is seen as an ‘environmental disturbance’ (Laughlin 1991) that is a catalyst requiring a response by management to help the organisation adjust or change. In response to this environmental disturbance the MAC report suggested that there was potential for renewal and reinvigoration of the APS without risking the loss of corporate knowledge. To enable this it advocated that APS agencies enact strategies that allow for skill and knowledge transfer to the remaining employees (Australian Public Service Commission 2003). Thus a question posed is: ‘What management techniques or technologies are available that address the issue of knowledge skill and retention?’

To answer this question one technology proposed is IC practice. This is because the concept of IC is especially relevant to those organisations that deliver services and since the public sector is mainly based on the delivery of services IC practice should have specific relevance to its operations (Department of Industry Science and Resources 2001). Additionally, in the IC literature human capital is seen as being at the core of IC as it may disappear when employees exit the organisation (Chen, Cheng et al. 2005). Thus since it can be established that IC practices are relevant to public sector organisations and that there is risk of losing human capital due to the

retirement of 'baby boomers' from these organisations this then provides the opportunity to discuss how Lands has faced and reacted to the challenge. It also presents the opportunity to investigate whether and how the impending retirement of 'baby boomers' from Lands has acted as a catalyst that allows for the implementation of IC practice, especially its human capital.

Like many other public sector organisations, Lands has also been constrained in developing human resources to take the place of retirees and the associated risks of knowledge and skills loss. This fear is also compounded by the view that the culture of the organisation in the past resisted the sharing of knowledge as knowledge was seen to be a base of individual power in the organisation. The attitude of staff as seen by one manager was that "...you keep your knowledge because you can sell it back, a very possessive approach".

This potential loss of knowledge is seen to be detrimental not only because it represents the loss of a resource, but it also threatens the viability of the organisation in the future and thus threatens the organisation with irrelevance, as espoused in the following:

"If you've got that ongoing knowledge and you can do your business in a smart, efficient and accurate way, your organisation continues to have relevance. If you can't do that, then a government has got to look and say well should this remain in government hands, or should we be giving it to someone else who is more efficient. So your organisation can become irrelevant."

So while there is a general fear at Lands that the 'ageing workforce disturbance' will have a detrimental effect on the organisation, there may also be some benefits

provided that the disturbance can be managed from a perspective that allows for adequate transfer of relevant knowledge. It is from this perspective that senior management at Lands views IC practice as a management technology that is suited to meet the challenges presented by the disturbance of an ageing workforce. This was evidenced when the management of Lands was questioned as to their motivation behind the use of IC practice during the first research phase. Many managers interviewed reported the 'ageing workforce disturbance' as the primary reason as to why IC practice was being used. The following comment from an IT manager is typical of the types of answers conveyed:

"My focus is on human capital. I acknowledge there is a huge asset in terms of information stored in databases but I take that as given. What brings it together is the human capital, which is where we face the greatest challenge with the ageing of the workforce".

These managers saw that IC practices were a valid management technology for this purpose. One manager expressed his view of IC practices as being:

"A means to avoid disaster... it will help us retain knowledge and hold on to a great store of knowledge."

Therefore, the 'ageing workforce disturbance' is seen as a catalyst that has allowed for the implementation of IC practices at Lands, thus establishing the first precondition required for 'colonization' change. The next precondition to change is the establishment of change in the design archetype and sub-systems by way of IC practice and this is discussed next.

5.2. *Changes in the 'design archetype' and 'sub-systems'*

IC practices are seen to directly affect the elements of the design archetypes and the sub-systems of Lands. According to Laughlin's (1991) organisational model the design archetype consists of organisation structure, decision processes and communication systems. The design archetypes elements of organisation structure and decision processes are affected by the creation of structures that are required for the implementation of IC practices. In the case of Lands the Organisational Capabilities Improvement Group (OCIG) was formed as an organisation-wide vehicle responsible for the establishment of IC practices and how to decide the best way to implement these practices as evidenced by the purpose of the OCIG:

“The purpose is to facilitate communication of the significance of intangible assets within the organisation, to provide data on a quarterly basis to the Executive Team as to progress being made and to facilitate the development of the annual Intellectual Capital Statement.”

The change in communication systems from an IC perspective was the development of a specific responsibility for the annual development of an IC statement. The first of these statements was developed and published as part of the 2005 Lands Annual Report (see NSW Department of Lands 2005) and will again form part of the 2006 Annual Report. In addition, there is evidence that IC is also forming part of the language of Lands (Cuganesan, Guthrie et al. 2006) which has enabled managers to communicate with each other using understood terms, although there has been some difficulty in establishing a common ontology of terms, as espoused by the senior IT manager:

“I've also seen there's been a much better understanding of some of the concepts. We started off looking at some of the earlier papers we got... and early demonstrations and presentations... as key players in the organisation had immersed themselves in the

literature, they started to have a body of language, and to talk about some concepts, which initially was just academic, but now we understand and we consider the practice.”

According to Laughlin’s (1991) organisational model, the sub-systems of an organisation consist of “tangible elements about which inter-subjective agreement is possible. These consist of buildings, people, machines, finance and the behaviours and natures of these elements.” There is no doubt that the ‘ageing workforce disturbance’ has also affected this part of the organisation. The first effect is the change in the makeup of the staff of the organisation. As a result of the disturbance there has and will continue to be the resultant turnover of staff as people retire and are or are not replaced (Douse 2006). Additionally there are the planned and current management actions that have resulted in response to the disturbance. Examples of these changes include the development of traineeships, graduate programs and mentoring programs all designed around the desire to either capture, pass on and or develop knowledge in response to the ageing workforce disturbance (Douse 2006). All of these responses are also valid constructs within the IC practices paradigm.

Now that it has been established that the response to the ‘ageing workforce disturbance’ is the development of IC practices, the first two preconditions of ‘colonization change’ have also been established. In order to determine that ‘colonization’ has taken place an examination of how IC practice has helped transform the ‘interpretive schemes’ of the organisation is discussed next.

5.3. Transformation in Lands’ ‘interpretive schemes’

This section of the paper examines changes in the interpretive schemes of Lands. It is argued that the accounting and management practices of Lands have been transformed

from practices based on a short-term financial focus to incorporate a longer-term non-financial view based on the management practices which incorporate the accounting of IC, especially human capital. This was espoused as a reason for the foray into the domain of IC practice. As Lands states:

“To concentrate only upon fiscal measures may cause managers to miss out on critical information important to current and future performance” (NSW Department of Lands 2005: 7).

The focus on short-term financial accounting in the past had brought about tension in the organisation in relation to the allocation of resources as resources were not seen as being adequately distributed across the organisation. A common view now is that the discourse based on IC at Lands has brought about a more equitable and targeted allocation of organisational resources that enables people to carry out the basic organisational functions. This is outlined by an operations manager:

“...ensuring that into the future I’ve got people here who have sufficient resource[s], not necessarily be trained, but have sufficient resource[s] to access, to be able to make the decisions and to be able to process the transactions that they are required to do in their daily work.”

Thus the benefits of better resource allocation are being seen to be derived through a greater understanding of the impact of IC practice. This is seen to have positive financial benefits as one senior LPI manager commented:

“So I suppose overall we’re moving towards documenting our information more precisely and understanding what we do to a far greater degree than what we’ve done in the past. And at the end of the day that has to me, as I’ve said, tremendous benefits financially to our

organisation because it takes a lot of the guess work out. It allows you to structure your organisation with the resources that you actually need to operate the business properly...”

In addition to the financial benefits many managers have broken the cost and financial outcome mindset that has predominated accounting in the past. Managers see that by accounting for IC it helps change the way that the organisation is managed as espoused by the head of HR:

“... [it] has got us over the, I guess, the mentality of reporting financially only; and got us thinking about how the organisation can be more successful. And how we can use the knowledge, but on a grander scale, by the way that we actually manage the organisation.”

Since the financial outcomes are no longer seen as the sole measure of success it allows for the accounting of the measures of IC to have an impact on the strategy of the organisation, as another HR manager comments:

“I think we’re now starting to find some direction, in terms of translating it into things like our annual reporting frameworks, and the draft intellectual capital report. I think we’re trying to turn it into something concrete, but we’re trying to also turn it into a strategic direction that assists the businesses [to] move forward.”

An example of how human capital has become a main focus of the development of IC practice at Lands is evidenced in the ‘Vision 2013’ project currently underway at Lands. The program “emerged out of the need to develop, design and implement a comprehensive workforce plan to successfully manage LPI’s human capital into the future” (Douse 2006). The main issue of concern in the instigation of this project was the ‘ageing workforce’, and the proposed strategic plan incorporates not only how this issue is to be managed but also how it integrates with other strategic initiatives at

Lands. In the document that outlines the plan, numerous indicators have been developed that account for human capital and these have been integrated with financial accounting measures of cost. Surrounding these measures are substantial narratives that explain what the indicators mean and describe resultant current and future management initiatives (see Douse 2006). In essence, this document doubles as a human-capital based IC report for LPI. Additionally, this report supplies the narrative and indicators that are part of the next Lands IC statement which is integrated with the forthcoming annual report (NSW Department of Lands 2006).

As the accounting of IC becomes part of the strategy of the organisation, the concept of IC practice has become engrained and forms the basis of current and future management action as evidenced in the ‘Vision 2013’ project documentation (Douse 2006), the Annual Reports (NSW Department of Lands 2005; NSW Department of Lands 2006) and, complimented by the views of management that have been presented, it exemplifies our argument that the ‘interpretive schemes’ of Lands have been effected. As a department head commented on the accounting of IC, he said it:

“...helped highlight and bring it more into awareness that we need to do something about that in a more formal [and] structured way.”

This then establishes the final precondition of ‘colonization change’ within Lands as affected by the environmental disturbance of an ageing workforce.

6. Conclusion

From the evidence presented in the case study, and using Laughlin’s (1991) ‘colonization’ model of organisational change as a skeletal framework for the

empirical data, this paper has focussed on the 'ageing workforce' as an environmental disturbance that was a catalyst for the implementation of IC practices at Lands. To establish that 'colonization' has been effected at Lands three preconditions were argued to have occurred. First, the ageing of the workforce was an environmental disturbance. Lands was affected by the ageing of the workforce and this posed a specific 'management challenge' owing to the fear of losing both people and their knowledge. This was identified as an 'environmental disturbance' that required a response including the foray into IC practice.

The second argument was that the design archetype and the sub-systems of Lands changed in response to the ageing workforce. From the perspective of the design archetype we witnessed the establishment of the Organisational Capabilities Improvement Group (OCIG) as an organisation wide-vehicle responsible for the establishment of IC practices. Also there was a change in communication systems with the development of an annual IC statement published as part of Lands' Annual Report. Regarding changes in the sub-systems of the organisation, there has been and will continue to be a resultant turnover of staff as people retire and are or are not replaced. In response to this, there are planned and current management actions which include the development of traineeships, graduate programs and mentoring programs.

Finally, it was argued that 'interpretive schemes' of Lands were also affected thus establishing that 'colonization' change had taken place. Here it was identified that the accounting and management practices of Lands had been transformed from practices based on a short-term financial focus to incorporate a long-term resource view based on the management practices which incorporate the accounting of IC, especially

human capital. Two changes were identified in support of this argument. First, the IC discourse at Lands has brought about a targeted allocation of organisational resources in response to the perceived inadequacies of resource allocation when viewed from a purely short-term accounting perspective. Second, there was a change from a cost and financial outcome and reporting mindset to a combined financial and IC-based mindset that had an impact on the development of strategy at Lands. To exemplify this change, especially from the perspective of the development of human capital, the 'Vision 2013' project at Lands was explored. This program was instigated in response to the management challenge of the ageing workforce and the proposed strategic plan incorporates not only how this issue is to be managed, but also how it integrates with other strategic initiatives at Lands.

This case study adds to the literature on IC in that it investigated the forces allowing for the implementation of IC practices and how these practices could transform an organisation. This case study is limited to the presentation of the findings of a particular phenomenon within one particular organisation within the Australian public sector context. Another limitation is that there may be other influencing factors that could be classified as 'environmental disturbances' which, if it were not for the management challenge of the ageing workforce, may also have been a catalyst for the development of IC practice at Lands.

As this study has been conducted from a large public sector organisation perspective there also exists the opportunity to investigate this topic from a private and third sector perspective, as well as from the perspective of organisations of various sizes. By continuing this research path we will continue to improve our understanding of

what other forces act as catalysts for the implementation of IC practice and how IC practices transform organisations.

Table I: Intellectual Capital Elements and Examples

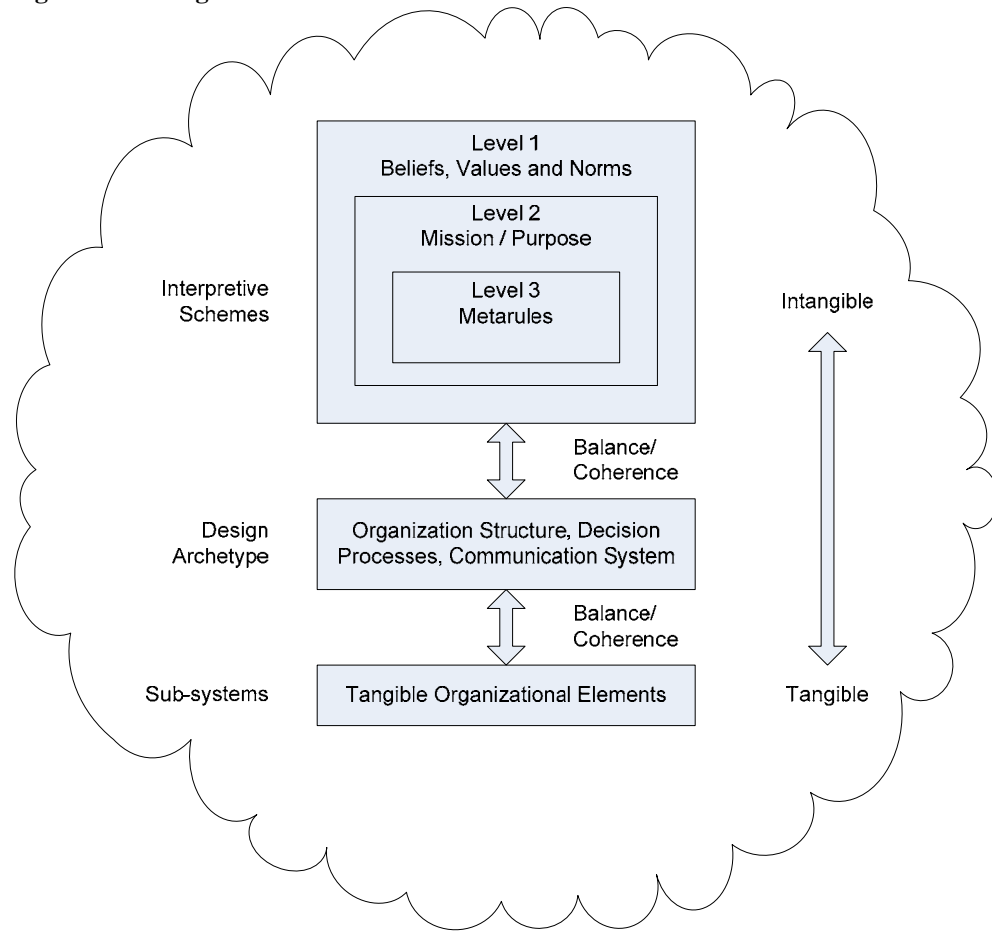
Internal Capital	External Capital	Human Capital
Management Processes Internal Networking Systems Management Philosophy Corporate Culture Financial Relations Research Projects Infrastructure Assets Information Systems Copyright Designs Patents Trade Marks Company Names	Research Collaborations External Networking Systems Brand, Company & Product Reputation Customers Customer Relations Distribution Channels Business Collaborations Licensing Agreements Supplier Contracts Supply Contracts Franchising Agreements	Know-How Education Employees Work-related Knowledge Work-related Competencies Entrepreneurial Spirit Vocational Qualification Confidential Information

Source: Adapted from (Hall 1993; Guthrie and Petty 2000; April, Bosma et al. 2003; Ricceri 2004)

Table II: Lands' data sources and timelines

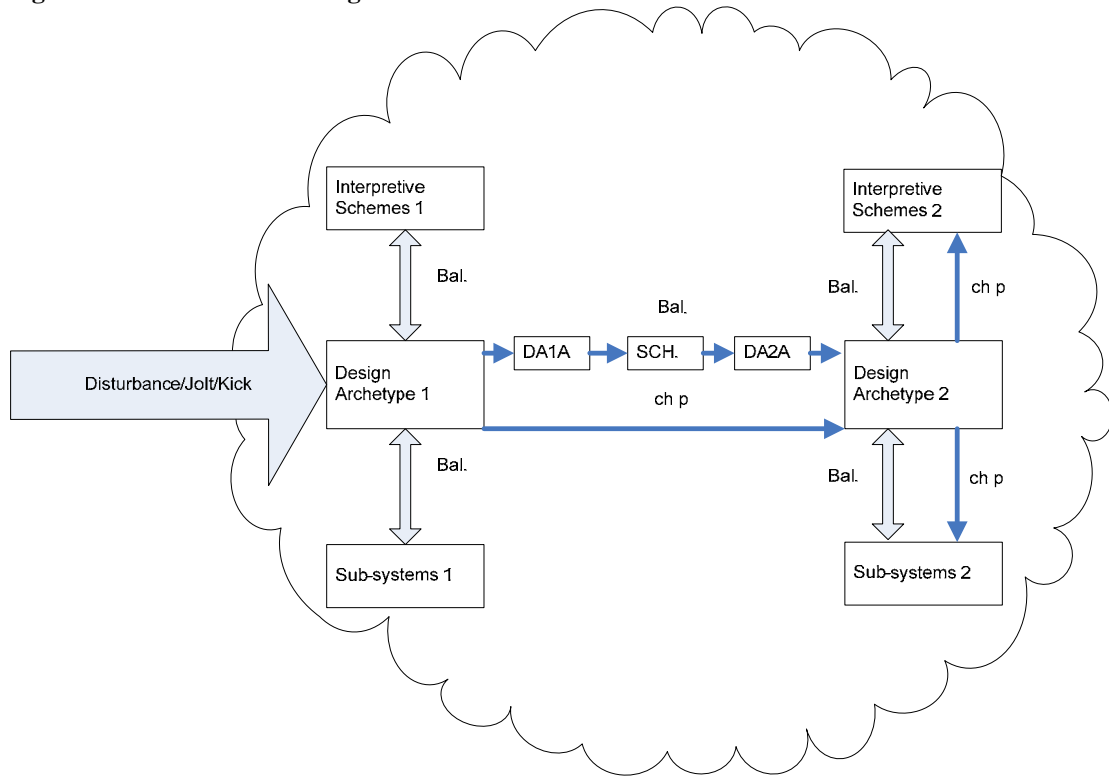
Stage 1: 2004		
Data Source	Primary Format	Date produced
2002/3 Annual Report	PDF File	Late 2003
Interview notes with Senior Management	Excel Spreadsheet	August 2004
2004 Annual Report	PDF File	Late 2004
Stage 2: 2005-6		
Data Source	Primary Format	Date produced
Divisional Business Plans	PDF Files	2003 to 2005
Executive Committee Meeting Minutes	Word Documents	December 2004 to September 2005
Focus Group Interviews Conducted with Lands Divisions	Handwritten Notes	August 2005
Organisational Capabilities Improvement Group Meeting Minutes	Word Documents	September 2005 to August 2006
Semi- Structured Interviews with Senior Management	Digital Voice Recordings and Transcripts	September 2005 to October 2005
Observations	Handwritten Notes	August 2005 to September 2006
2005 Annual Report	PDF File	Late 2005
Vision 2013 LPI Workforce Plan	Internal publication	July 2006
2006 Annual Report (Draft)	Internal publication	September 2006

Figure 1: An Organisational Model



Source: Laughlin (1991)

Figure 2: Second Order Change: Colonization



Source: Laughlin (1991)

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