A Method for Assessing and Developing

Features of the Learning Organization

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ABSTRACT

The primary objective of this thesis is to evolve **"a method for assessing and developing features of a learning organization"**. To fulfill this, I approached the thesis by examining several research questions and using multiple research methodologies. The research questions were not all established at the outset. Rather, they evolved as features of a journey down a road less traveled. With this journey came the decision to write the thesis in the first person.

The first research question was "*Q1: "What will bridge the divide between organizational learning and the learning organization?*" By reviewing the extant literature on organizational learning and the learning organization, I developed a theoretical framework that linked these two streams. The framework suggests that the extent of divide between the two streams is determined by the extent of learning transfer. The learning transfer is affected by the learning barriers operating at the levels of learning (i.e., individuals, groups, and organizational). This led me to my second research question *Q2: "What are these barriers to learning transfer and how do they impact the levels of learning in the organization?"* I cumulated the dispersed literature on learning barriers, and synthesized the learning barriers into five key dimensions: Intrapersonal, relational, cultural, structural, and societal. I then used the Delphi technique on 17 individuals to investigate the impact of the learning barriers on the levels of learning. This generated two additional research questions. The third research question was *Q3: "How do individuals initiate a double-loop change?"* This deals with the little researched area of initiation of double-loop change whilst

engaging with the interfaces at the levels of learning. I used multiple case studies to examine this question and found that individuals transit through four distinct stages when initiating double-loop change: 'embedded', 'embedded discomfited', 'scripted', and 'unscripted'. Once double-loop learning has been initiated at the individual level, it is important that it is transferred across the organization. Therefore, my fourth research question was *Q4: "How does a new shared understanding for a double-loop change develop across the organization?"* I did an in-depth, single case based investigation of an organization. Using Identity and Complexity theory perspectives, I tracked the evolving new shared understanding through four phases: de-identification phase, situated re-identification phase, transition phase, and identification with core ideology phase.

The key insights from examining these research questions, particularly insights from examining Q3 and Q4, enabled me to suggest nine key organizational interventions necessary to overcome the learning barriers and develop a learning organization: Identifying, developing, and dispersing double-loop mastery; Enabling constructive contradictions; Creating a superordinate organizational identity; Building emotional intelligence (in individuals and groups); Ambidextrous leadership; Strategic support for experimentation; Promoting 'systems doing'; Accessibility of valid information; Institutionalizing scanning across industry boundaries. When these nine organizational interventions are implemented, they produce five new learning organization orientations: genetic diversity, organizational ideology, organizational dualism, organizational coupling, and strategic play. These five new learning organizational orientations provide the archetypes of the learning organization. I then

developed an instrument to assess these five new orientations, and did a preliminary testing of the instrument.

While aspects of my work overlaid with previous knowledge, new advances in knowledge were established by:

- Postulating a link between the streams of organizational learning and learning organization
- Synthesizing learning barriers into the five key dimensions, and investigating their impact on the levels of learning
- Understanding the stages of double-loop learning initiation by an individual, whilst engaging with the interfaces at the levels of learning
- Understanding the process of a new shared understanding evolving
- Postulating five new orientations of the learning organization

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CHAPTER 1

INTRODUCTION

"What is an organization that it may learn?"

The above question, posed by Argyris and Schön (1996), continues to be the basis on which most of the organizational learning research is conducted. In spite of a plethora of such research, initiating and transferring learning at the individual level to the organizational level remains problematic (Argyris, 2004). This has continued to frustrate practitioners, making the prescriptive approaches of implementing learning organization less than successful.

I experienced the above issue firsthand, as a practitioner. My first exposure to the learning organization was in the year 1998 when I was made responsible for a large apparel manufacturing organization, based in Sri Lanka, with over 1700 employees. The organization had recently invested in a world class manufacturing facility, with an expectation of increased business into the US and UK branded apparel market. However, due to increased competition from China, the organization experienced a continuing decline in business and for the first time in its 13 year history, made a financial loss in the year 1997.

The apparel manufacturing sector in Sri Lankan suffers from what can be described as the "red queen" (Barnett & Sorenson, 2002, p. 289) phenomenon.

The industry itself is inward looking and knowledge creating activities are constrained by the overriding beliefs and assumptions governing the industry segment. Due to its history of success, with 48.5% of the country's exports earnings coming from the apparel sector (Sri Lanka Apparel Association, 2002), tremendous pressure is exerted by financial institutions and other key stake holders on new comers to mimic industry practices. This mimicking of industry practices is necessary to gain legitimacy in the industry segment (DiMaggio & Powell, 1991; Seo & Creed, 2002).

Given this type of industry environment, and the deep rooted beliefs and assumptions of the senior management, the organization was not able to adapt to the rapidly changing global economy. When I joined, I had a perceived weakness, which ultimately turned out to be an asset in the re-engineering of the organization. I had no knowledge of the apparel markets and had never worked in that industry segment. I had spent 3 years with Coopers & Lybrand as a technical consultant, and 5 years with Unilever (a multinational fast moving consumer goods business) working in the engineering and information technology divisions. Therefore, my mental model was not constrained by the dominant beliefs and assumptions of the industry and the organization. I was able to ask the question "why" of dominant and cherished practices. It soon became apparent that the only way the organization could compete, was to switch to manufacturing high valued-added products. We decided to re-engineer the organization as a manufacturer of women's underwear (more specifically into bra manufacturing). It was around this period of time, in early 1998, that I came across Senge's (1990) five disciplines of a learning organization: mental model, personal mastery, team work, shared vision, and systems thinking. I saw the five disciplines as a means of

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creating an organization that would be capable of implementing radical learning, and continually adapting to a changing environment. Senge's (1990) prescriptions were attractive and his arguments compelling.

However, a different story emerged when I tried implementing these prescriptions in practice. The decision to re-engineer the organization into a bra manufacturer was initiated at the individual level. It required a complete revamp of the production procedures, developing new sourcing relationships, and investing in design and development, which are traditionally based in fashion centers of the world such as Paris, New York, London, and Milan. This radical learning went against the dominant beliefs and assumptions of the organization. However, for the organization to successfully re-engineer, the learning at the individual level has to be translated across the levels of learning (i.e., individual, group, and organizational) so that a new shared understanding is developed across the organization (Crossan, Lane, & White, 1999). Although Senge's five disciplines implicitly consider the levels of learning in the organization, they tells us very little about how to deal with the barriers that arise when translating radical learning across these levels (see Figure 1.0)[1]. This was the single most frustrating aspect as a practitioner trying to implement Senge's (1990) five disciplines (see also Steiner, 1998; Tan & Heracleous, 2001, for similar experiences). This issue is what motivated me to choose the subject of a learning organization for my PhD study.

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[1] In Figure 1.0, shared vision is considered to be a group level resource. Although the shared vision is articulated at the organizational level, the level of engagement and its implication as a positive motivational force happens at the group level (especially if it is a radical learning)
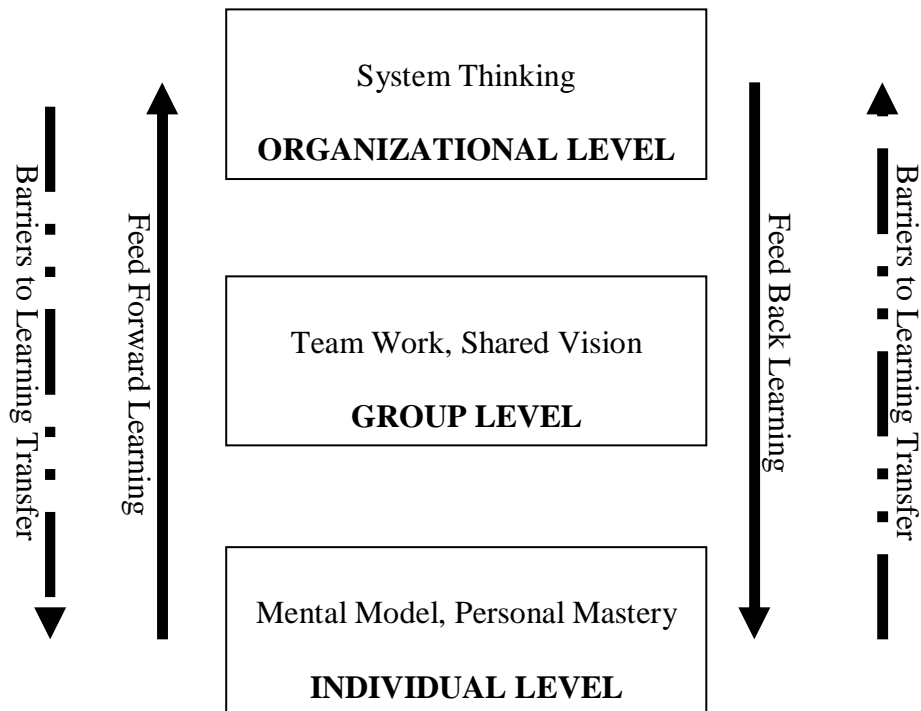
Figure 1.0 – Transfer of Learning across the Levels of Learning in the

Organization

In order to situate later discussions in an appropriate context, I digress a little at this stage to give a brief description of the levels of learning. An organization consists of multiple levels of learning (Beeby & Booth, 2000; Crossan et al., 1999; Nonaka & Takeuchi, 1995; Robinson, Clemson, & Keating, 1997): individual, groups or teams, organizational, and even inter-organizational (if applicable).

Individual level: Many researchers consider that new learning originates in individuals (Argyris & Schön, 1996; Kim, 1993; Simon, 1991). According to Crossan et al. (1999), learning begins with intuition and is largely a subconscious process involving perceptions of patterns and possibilities. If the individual is able to bring in new patterns of thinking, which challenge the current beliefs and

assumptions of the organization, the individual is said to have an entrepreneurial intuition (Crossan et al., 1999). However, if the patterns and possibilities are constrained by routines of the past, where the beliefs and assumptions of the organization are not questioned, the individual is said to have an expert's intuition (Crossan et al., 1999).

Groups: Although new learning begins with the individual, it occurs in the organization as a collective. Indeed it is considered by many to be a social process (Bawden & Zuber-Skeritt, 2002; Englehardt & Simmons, 2002; Gerber, 1998; Robinson et al., 1997; Tucker, Edmondson, & Spear, 2002). Groups thus serve as a learning forum for individuals. This forum provides an opportunity for dialogue to take place, which is described as a process of inquiry and advocacy (Senge, 1990). Hall (2001) puts it succinctly by stating "Knowledge creates knowledge only when it is shared" (p. 19).

Organizational: New learning which has taken place on the part of the individual and the group, has to be transferred and instituted into the wider organization (Crossan et al., 1999). This is reflected in changes to the organization's dominant routines, procedures and systems.

Inter-organization: With rapid changes in the external environment, it becomes difficult, if not impossible, for an organization to develop all the required competencies (Hatten & Rosenthal, 2001). Strategic alliances with other organizations, whilst retaining core competencies, are the model that most organizations follow to sustain competitive advantage. These alliances necessitate the transfer of learning between such partner organizations.

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1.1 The Research Journey

I did not begin my PhD study with any clear research questions, but rather with an overall objective of finding "**A method for assessing and developing features of a learning organization.**" How I managed to achieve that overall objective can be described as a journey of discovery, with research questions being generated as the study progressed. Although the thesis is structured to show linear progression, there were several iterations along the way. I will begin by outlining four basic assumptions on which this thesis is built:

1. The type of learning under consideration is radical learning, which seeks to alter the existing beliefs and assumptions of an organization. This type of learning is referred to as double-loop learning[2] (Argyris, 2004; Argyris & Schön, 1996), generative learning (Garvin, 1993; Senge, 1990), or second order learning (Quinn, 1996). In contrast, single-loop learning seeks to make incremental improvements without altering the dominant beliefs and assumptions of the organization. Double-loop learning is a critical capability that must be developed in present day organizations, due to the rapid and discontinuous changes in the external environment (Probst & Raisch, 2005).

2. Double-loop learning begins at the individual level. It is individuals who learn on behalf of the organization (Argyris & Schön, 1996; Kim, 1993).

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[2] Nielsen (1996) refers to another type of learning called triple-loop learning. This type of learning seeks to alter the social norms that define the dominant beliefs and assumptions of an organization.

3. Double-loop learning seeks to create new knowledge in individuals. Knowledge is defined as "content + structure of the individual's cognitive system" (Propp, 1999, p. 227). Content is regarded as disorganized information and becomes knowledge when meaning is provided by the cognitive framework or mental model of the individual. The mental model is a combination of beliefs, attitudes, values, opinions, and assumptions that govern the way meaning is provided. Marakas (1999) sums it up succinctly by defining knowledge as "meaning made by the mind" (p. 264). Therefore, new knowledge results in an altered belief system and MUST result in a change in behavior (Argyris, 2004)[3].

4. This study is more applicable for larger organizations, which have all the levels of learning present.

In reading the relevant literature, I was struck by the constant usage of the terms "organizational learning" and the "learning organization." Some researchers use these terms interchangeably (e.g., Crossan et al., 1999; Rahim, 2002), whilst others make clear distinction between them (e.g., Örtenblad, 2001; Watkins & Marsick, 1996). However, a clear distinction between the two streams occurred in the mid-1990s (Easterby-Smith, 1997). Organizational learning came to describe the socio-psychological process of learning (Lipshitz, 2000), whilst learning organization was used to refer to a form or type of an organization (Örtenblad, 2001). Therefore, my first research question was:

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[3] New knowledge is also said to have potential use for the future with no change in behavior (Hill, 1996; Huber, 1991). However, in my research I consider this to have less utility value as knowledge depletes rapidly in the current environment of rapid change.

Q1: "What will bridge the divide between organizational learning and the

learning organization?"

In exploring this divide, I postulated that the gap between organizational learning and the learning organization can be bridged by minimizing the barriers to the learning transfer (for example, see Figure 1.0 above). In essence this means, in an idealistic situation, the socio-psychological process of individual learning will transfer, with minimum hindrance, to the organizational level. This would result in a new shared understanding, or a new belief system, developing across the organization, and also in new systems and procedures being institutionalized (Crossan et al., 1999). These would change the behavior and form of the organization. Based on the above research question, I submitted an article entitled "Exploring the divide – organizational learning and learning organization" to the *Learning Organization* journal. The article passed the refereeing process, was published in the *Learning Organization* journal (Sun & Scott, 2003a), and received the Emerald Literati club award for outstanding paper for 2004.

I then sought to find some answers to the next research question, which evolved from the first research question:

Q2: "What are these barriers to learning transfer and how do they impact

the levels of learning in the organization?"

On reviewing the extant literature on learning barriers, I found the literature to be scattered and non cumulative but used it to develop the argument that learning barriers can be categorized into five dimensions: Intrapersonal, Relational,

Cultural, Structural, and Societal. This research subsequently formed a section of a paper that was titled "Reframing and engaging with organizational learning constraints." This paper was peer reviewed and published as a book chapter in *Current Topics in Management*, Vol. 10 (Sun, Scott, & McKie, 2005).

However, the literature review did not reveal sufficient detail on how learning barriers affect the levels of learning. Therefore, I conducted an empirical investigation based on the research question Q2, using the Delphi technique with a group of 17 participants. This study was an initial exploratory study, but generated interesting outcomes and further research questions that needed investigation. I wrote an article based on this study and titled it, "An investigation of barriers to knowledge transfer." This article was peer reviewed and published in the *Journal of Knowledge Management* (Sun & Scott, 2005a).

From the Delphi study, it was evident that individuals had to interface with all levels of learning, and each of these interfaces raised significant barriers to double-loop learning. It also led to the more fundamental question of how an individual could gain an insight that is radically different from the beliefs and assumptions that govern his or her mental model (Westenholz, 1993). The individual not only has to engage with his or her mental model, but also engage the interfaces at each level of learning to initiate a double-loop change. This generated my next research question:

Q3: "How do individuals initiate a double-loop change?"

The above question has two fundamental components: one is a creative intuition that is radically different from the dominant beliefs and assumptions of the organization, and the other is interpreting and articulating that creative intuition in an organizational context. I conducted case studies on seven individuals who initiated double-loop change and found that individuals transited through the following four stages: embedded, embedded disconfirmed, scripted, and unscripted stages. This study was presented in an article titled "Sustaining second order change initiation: structured complexity and interface management," which, after peer reviewing was published in the *Journal of Management Development* (Sun & Scott, 2005b).

Once double-loop learning is initiated at the individual level, it must then translate to the organizational level. A new shared understanding resulting from a new belief system must develop across the organization. Therefore, the other research question that arose from the Delphi study was:

Q4: "How does a new shared understanding for a double-loop change develop across the organization?"

Finding an organizational context to investigate the above research question was a significant concern. However, I believe by God's grace, an organization was provided for this investigation. ABB contacted my chief supervisor, Dr John Scott, and wanted a learning history developed for their strategic outsourcing partnership with CHH-Kinleith. CHH-Kinleith had outsourced their entire maintenance function to ABB, and in turn ABB absorbed around 140 CHH-Kinleith employees. ABB formed a new unit called ABB-Kinleith in order to

provide this outsourced service. About 90% of the employees of ABB-Kinleith were former CHH-Kinleith employees and had to develop a new shared understanding, from being employees of CHH-Kinleith to working within a customer orientated service provider. I used two different theoretical perspectives, Identity theory and Complexity theory, to study how a new shared understanding developed across ABB-Kinleith. The study revealed that ABB-Kinleith evolved this new shared understanding through complex adaptation rather than the usually prescribed command and control processes.

This research journey, investigating the four research questions (Q1-Q4), gave me insights into the critical learning barriers affecting the learning organization and the type of interventions necessary to overcome them. It also made me wonder if these organizational interventions were implemented, would they instigate new orientations of a learning organization. This gave rise to my fifth and final research question:

Q5: What are the new orientations of a learning organization, and how do I measure them?

I postulated that if the interventions were implemented effectively, they would give rise to five new orientations of a learning organization: Genetic Diversity, Organizational Ideology, Organizational Dualism, Organizational Linkage, and Strategic Play. This argument was included as a section of the paper titled "Reframing and engaging with organizational learning constraints," and was published in *Current Topics in Management*, Vol. 10 (Sun et al., 2005).

I then constructed a survey instrument to measure these five orientations, based on a qualitative measurement template suggested by Sun and Scott (2003b)[4], and then validated the instrument using procedures suggested by Churchill (1979).

The description of my research journey is not linear, as I had to repeatedly revisit some of these research questions. However, the process I followed in writing peer reviewed journal articles at each stage helped me to refine my thoughts, especially after receiving constructive feedback from reviewers. This journey partially fulfills the requirements of my PhD research, which is to develop **"A method for assessing and developing features of the learning organization."** "Assessing" implies the need to develop an instrument to measure features of a learning organization, whilst "developing" focuses on the type of interventions necessary to develop these features.

The research questions (Q1-Q4) provided a means of funneling critical factors of a learning organization, which either did not exist in the extant literature or whose impact was not made clear. These research questions, especially Q3 and Q4, were addressed using methodologies which are phenomenological or qualitative. The methodology used to develop an instrument to assess the orientations of a learning organization is positivistic or quantitative. Therefore, at the meta-level, this PhD research employs multiple methodologies.

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[4] I wrote an article titled "Towards a better qualitative performance measurement in organizations". This was published in a peer reviewed journal, the *Learning Organization.*

1.2 The Research Methodology

The paradigm war continues to rage amongst academics, especially those who deal with social science disciplines. Even the very definition of *paradigm* is ambiguous, and may mean different things to different people (Collis & Hussey, 2003). I take the philosophical view that a paradigm reflects an individual's basic beliefs about the world (Morgan, 1979). Therefore, at one end of the divide, an individual's ontological assumption could be that reality is subjective and is seen through the multiple lens of those participating in the research (this is categorized as belonging to a qualitative paradigm), and the other end of the divide is that reality is objective, singular, and viewed apart from the researcher (this is categorized as belonging to a quantitative paradigm) (Creswell, 1994). Individuals who are primarily qualitative researchers "see it only when they believe in it," and those who are quantitative researchers "believe it only when they see it" (Smith, 1983). Some researchers claim that an individual cannot inhabit two worldviews or belief systems.

This debate has led to paradigm wars resulting in what is now claimed to be the incommensurability of paradigms. It is therefore a requirement that researchers state their ontological assumption at the outset, which in turn guides the methodology/methodologies they employ. However, the incommensurability of paradigms has been recently criticized, with Lewis and Grimes (1999) stating that theory can be developed from multiple paradigms using multiple theoretical perspectives. Mingers and Brocklesby (1997) argue that a methodology is usually sympathetic to a particular paradigm, and hence by employing multiple

methodologies to a particular research question, one can overcome the incommensurability of paradigms. They term this approach "multimethodology".

My approach to the PhD research differs from what has been strictly advocated by Lewis and Grimes (1999), and Mingers and Brocklesby (1997). As described in my research journey, I use methodologies sympathetic to qualitative paradigm to find answers to questions Q3 and Q4, and methodologies sympathetic to quantitative paradigm to find answers to questions Q2 and Q5. This approach is illustrated in Figure 1.1 below, and, at the meta-level, can be described as multiple methodology[5] research. I chose to write this thesis in the first person to indicate the immediacy and the closeness of my involvement as a research participant (Collis & Hussey, 2003).

I chose this path for reasons which are explained in detail in Chapter 4. Organizational learning and learning organization cannot be studied using a single research methodology sympathetic to a narrow research paradigm, because they not only involve the socio-psychological processes of individuals, but also the routines and practices of an organization. The former is more subjective and involves radical change, whilst the latter is more objective and regulated.

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[5] There is an on-going debate on the definition of methodology and method (see Mingers, 2003a; 2003b; Mingers & Brocklesby, 1997). In this thesis I take the narrow view that a methodology is a set of methods that are often used together in a particular research project (Mingers, 2003b).

Research Question	Research Methodologies	Theoretical Perspective	Research Paradigm
Q1: What will bridge the divide between organizational learning and the learning organization?	Synthesizing and interpreting literature	Theoretical-argumentative perspective	
Q2: What are these barriers to learning transfer and how do they impact the levels of learning in the organization?	Synthesizing and interpreting literature Delphi technique	Theoretical-argumentative perspective Theoretical-analytical perspective	Quantitative paradigm
Q3: How do individuals initiate double-loop change?	Case studies using Grounded theory coding technique	Cognitive theory Complexity theory	Qualitative paradigm
Q4: How does a new shared understanding for a double-loop change develop across the organization?	Case studies using Grounded theory coding technique	Identity theory Complexity theory	Qualitative paradigm
Q5: What are the new orientations of a learning organization and how do I measure them?	Validation of survey instrument using statistical methods	Theoretical-analytical perspective	Quantitative paradigm

Figure 1.1 – An Overview of the Meta-Level Multiple Methodology Research

1.3 The Thesis Outline

I have structured this thesis to reflect my PhD journey. In Chapter 2, I describe how the divide between organizational learning and the learning organization was explored. I synthesize the extant literature on organizational learning and the learning organization, and argue for a theoretical framework to bridge the divide between organizational learning and the learning organization.

Chapter 3 surveys the extant literature on learning barriers, and synthesizes and categorizes them into five dimensions: Intrapersonal, Relational, Cultural, Structural, and Societal. The Delphi technique that was employed to find the impact of learning barriers on learning transfer is then described. This chapter concludes with the outcome of the study and further research questions that need to be investigated.

Chapter 4 defends the meta-level multiple methodology research. This chapter does not seek to present a detailed research design, but rather argues a need for the meta-level multiple methodology approach. The detailed research design for research questions Q3, Q4, and Q5 will be separately dealt with in Chapters 5, 6 and 7 respectively. The primary reason why this section was placed after Chapter 3 is to give a better flow to this thesis.

Chapter 5 deals with Q3: "*How do individuals initiate a double-loop change?*" This Chapter gives a concise overview of Cognitive and Complexity theories,

applies these theories to the research context, describes the individual cases, introduces the specific research method, and details the outcomes of the study.

Chapter 6 deals with Q4: "*How does a new shared understanding for a double-loop change develop across the organization?*" In this chapter, I introduce the organizational context of the case study, give a concise overview of the theoretical perspectives governing the study and the research methodology employed, as well as the outcomes of the study.

Chapter 7 deals with Q5: "*What are the new orientations of a learning organization, and how do I measure them?*" I begin by synthesizing the insights from Chapters 5 and 6 and then suggest some key interventions for engaging with the critical learning barriers. I then describe the five orientations of the learning organization that arise from implementing these interventions. Finally, I describe the survey instrument that was developed, and how it was refined.

Chapter 8 summarizes the contribution to knowledge, describes the major limitations of this research, and suggests some further work that can be done. Although it is best to read this thesis from Chapter 1 through to 8, the reader can read chapters 2, 3, 5, 6, and 7 independently if they so wish.

CHAPTER 2

EXPLORING THE DIVIDE: ORGANIZATIONAL LEARNING AND THE LEARNING ORGANIZATION

Q1: "What will bridge the divide between organizational learning and the learning organization?"

2.1 Introduction

The first mention of the concept "organizational learning" can be traced back to March and Simon (1958). For the next 30 years these concepts were peripheral to mainstream organizational theory, although a few significant contributions came from Cangelosi and Dill (1965), Argyris (1967; 1976; 1977a; 1977b), March and Olson (1975), Duncan and Weiss (1979), Daft and Weick (1984), Fiol and Lyles (1985), and Levitt and March (1988). From the 1990s, one can observe an exponential growth, both in the volume of publications and in the number of journals offering such publications (Crossan & Guatto, 1996). With the increasing interest, especially due to the rapid and discontinuous changes in the external environment (Easterby-Smith, Snell, & Gherardi, 1998), the concepts of

organizational learning were incorporated into mainstream literature. Some examples would be:

- Strategic management literature – Where organizational learning is used to support future strategic initiatives that create competitive differentiation (e.g., Thomas, Sussman, & Henderson, 2001); where organizational learning is linked to organizational strategic renewal (Crossan & Berdrow, 2003); where learning is necessary to create organizational core competencies (e.g., Dunphy, Turner, & Crawford, 1997; Hamel & Prahalad, 1996); and where learning is necessary for effective inter-organizational strategic alliances (Hamel, 1991; Larsson, Bengtsson, Henriksson, & Sparks, 1998).

- Identity theory literature – Where double-loop learning is necessary to change the identity of an organization, but in doing so would draw strong ego-defensive reaction from individuals whose self identity is intertwined with the organizational identity (Brown & Starkey, 2000).

- Leadership literature – Where a transactional leadership style emphasizes feed-back learning of existing knowledge, and is suitable for a stable environment, whilst a transformational leadership style privileges feed-forward learning that creates new knowledge and is suitable for a changing environment (Vera & Crossan, 2004).

It was in the late 1980s that a new terminology the "learning organization" emerged. This was first proposed by Pedler, Boydell, and Burgoyne (1989), and was then popularized by Senge (1990) with his book "*The Fifth Discipline: The Art and Practice of the Learning Organization.*" With the introduction of this

terminology, some researchers began to use the term organizational learning and learning organization interchangeably (e.g., Boje, 1994; Crossan & Guatto, 1996; Crossan et al., 1999; Kim, 1993; Rahim, 2002), whilst others chose to differentiate between the two streams (e.g., Garvin, 1993; Senge, 1990; Watkins & Marsick, 1996). However, a clear bifurcation between the two streams occurred in the mid 1990s (Easterby et al., 1998). I will summarize the reasoning for this bifurcation, as described in the extant literature, in the section to follow.

2.2 The Bifurcation as Described in the Literature

The bifurcation between the two streams is primarily based on the degree of normativity (Örtenblad, 2001; Robinson, 2001). Based on this singular dimension that differentiates the two streams, the extant literature offers five distinctions. For example, organizational learning is the socio-psychological process of learning and is descriptive, whilst the learning organizations are prescriptions necessary to create a type or form of an organization (i.e., descriptive-prescriptive distinction). Other distinctions, arising from the degree of normativity, are: naturally occurring versus not naturally occurring; obtainable versus ideal; and domain of academics versus domain of practitioners. Apart from the above, which are primarily based on the degree of normativity, Örtenblad (2001) offers another distinction by considering entities of learning and knowledge location. A brief summary of these five distinctions are given below.

2.2.1 Descriptive versus prescriptive

This distinction was proposed by Tsang (1997) and elaborated by Robinson (2001). Organizational learning is concerned with how learning takes place in the organization (Tsang, 1997), and describes the socio-psychological processes of learning such as single-loop and double-loop (Robinson, 2001). It is thus a question of description, and is seen in the following definitions of organizational learning:

> Organizational learning is a process of detecting and correcting errors (Argyris, 1977b, p. 116).

> Organizational learning is identified, for the purpose of this paper, as the coming together of individuals to enable them to support and encourage one another's learning, which will in the longer term be of benefit to the organization (Hodgkinson, 2000, p. 157).

> Organizational learning is comprised of the following processes: Open-minded inquiry, informed interpretation, and accessible memory (Day, 1994, p. 10)

In contrast, to such organizational learning, a learning organization is prescriptive and is concerned with the question "how should an organization learn (Tsang, 1997)?" It therefore deals with prescriptions and interventions necessary to create an organization capable of continuous learning and change (e.g., Senge's five disciplines). This is described as the normative strand (Easterby-Smith, 1997; Robinson, 2001). The following definitions of a learning organization embrace this prescriptive approach:

A learning organization is an organization skilled in creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights (Garvin, 1993, p. 80).

A learning organization sustains internal innovation with the immediate goals of improving quality, enhancing customer or supplier relationships, or more effectively executing business strategy, and the ultimate objective of sustaining profitability (Mills & Friesen, 1992, p. 147).

2.2.2 Naturally occurring versus not naturally occurring

In any organization some form of learning takes place. Even simple error correction and detection can be considered a type of single-loop learning. This is why organizational learning is described as naturally occurring, and is considered a natural state of the organization (Dodgson, 1993). On the other hand a learning organization needs effort, as it requires the implementation of prescriptions to move the organization beyond its existing form and behavior. Double-loop learning, which does not occur naturally in the organization, is thus a necessary capability for a learning organization. The following statement by Dodgson (1993) clarifies this distinction:

Organizational learning is as natural as learning in individuals…..the learning organization can be distinguished as one that moves beyond this natural learning, and whose goals are to thrive by systematically using its learning to progress beyond mere adaptation (p. 380).

2.2.3 Obtainable versus ideal

Since organizational learning is naturally occurring, it is considered to be obtainable or reachable (Örtenblad, 2001). All organizations have to learn in order to survive (Kim, 1993). Employees in their daily work life continue to adapt and improvise, when changing situations demand them to do so.

However, since double-loop capability is a necessary proficiency for the learning organization, it is considered an ideal state or form (Tsang, 1997). Some consider an organization to reflect different archetypes (Moilanen, 2001; Tosey & Smith, 1999), as it journeys towards this ideal state or form (which can be considered as a special type of archetype).

2.2.4 Domain of academics versus domain of practitioners

Organizational learning is considered to be the domain of academics whilst a learning organization is considered the domain of practitioners (Easterby-Smith et al., 1998; Tsang, 1997). Each has an infrastructure of journals, conferences, sponsorships, and internet discussion lists, and it is difficult to find significant crossovers of researchers and practitioners from one stream to another (Easterby-Smith et al., 1998). Alternatively, one can view this as a distinction between theory and practice.

2.2.5 Distinction made by considering the entities of learning and knowledge location

Örtenblad (2001) makes another distinction between organizational learning and the learning organization by considering the entities of learning (i.e., who learns) and the knowledge location (i.e., where does knowledge exist). This distinction is markedly different from what has been previously described.

Örtenblad (2001) considers three entities of learning: the individual, the organization as a super-person, and the collective. Individual learning on behalf of the organization is well described in the literature (e.g., Argyris & Schön, 1996; Kim, 1993). However, what is not clear is how organizations act as a super-person and learn. Örtenblad (2001) takes the view that organizations have memories, which store routines, procedures, documents, and cultures and therefore act as super-persons by either reinforcing existing knowledge or enhancing existing organizational memory. This is similar to the view taken by Huber (1991), Crossan et al. (1999), and Bontis, Crossan and Hulland (2002). Finally, the collective as an entity of learning occurs when groups or teams learn on behalf of the organization.

Örtenblad (2001) considers three types of knowledge location: outside the individual, inside the individual, and knowing. Knowledge can be embedded within routines and processes in the organization and is thus said to exist outside the individual. Knowledge can also be embodied inside the individual and would normally be tacit (Nonaka & Takeuchi, 1995). Knowledge can also exist tacitly

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within the collective as knowing, and is considered as encultured knowledge. Such encultured knowledge takes time to develop and requires extensive periods of socialization between individuals in the collective (Nonaka & Takeuchi, 1995).

In organizational learning, Örtenblad (2001) considers knowledge to exist outside the individual, and the organizational memory to be the primary focus. Therefore, the entities of learning are the individuals and the organization as a super-person, and must result in the enhancement of organizational memory. In the learning organization, organizational memory is less emphasized. The focus is more on individuals learning on behalf of the organization and enhancing their internal knowledge. Therefore, the entity of learning is the individual, and knowledge exists primarily inside the individual (and to a lesser degree outside the individual).

2.3 How Does Current Literature Address the Bifurcation

Tsang (1997) suggests that practitioners in the learning organization stream must formulate relevant prescriptions for a given organizational context based on the many descriptive studies done by academics in the organizational learning stream. A "one size fits all" approach will never work and it is critical for practitioners to know how organizational learning is affected by organizational size, structure, age, culture etc. Tsang therefore, in trying to build a learning organization, starts at the descriptive end of the descriptive-prescriptive continuum. However, Tsang's suggestion lacks practicality. Being a practitioner myself and having interacted with other practitioners, it is more feasible to start at the prescriptive end of the

continuum with standard prescriptions. These prescriptions must then be adapted to the organizational context, informed by descriptive research. Classic examples of this are the prescriptive approaches of Total Quality Management (TQM, and Business Process Re-engineering (BPR). Easterby-Smith (1997) suggests that the field of organizational learning draws from six academic disciplines: Psychology and Organizational Development, Management Science, Organizational Theory, Strategy, Production Management, and Cultural Anthropology. Of these six disciplines, the majority of the concepts that have found their way to the learning organization stream are from the Psychology and Organizational Development, and Management Science disciplines. For example, Garvin's (1993) learning organization model stresses systematic problem solving and ongoing experimentation, borrowing from the academic discipline of Management Science (Easterby-Smith, 1997). Senge (1990), with his five-discipline approach for a learning organization, draws from Management Science as well as Organizational Development and Psychology disciplines. Even the more recent attempts of developing a learning organization model, for example "The integrated model" by Örtenblad (2004), borrows from Psychology and Organizational Development, with a strong emphasis on single-loop learning, double-loop learning, and on developing an organizational climate for learning. Örtenblad (2004) also advocates ongoing experimentations and systematic formal training, which are prescriptions aligned to the discipline of Management Science.

However, the suggestions of Tsang (1997) and Easterby-Smith (1997), of mutually borrowing concepts from each other, have occurred in the organizational learning and the learning organization streams. To confirm this, I will consider the early work on organizational learning by Argyris and Schön (1978), and the

early works on learning organization by Huber (1991) and Senge (1990), in the sections to follow. I will then show how subsequent work on organizational learning and learning organizations borrows from these early works. The mere presence of organizational learning concepts in the prescriptive strand, and the presence of learning organization concepts in the descriptive strand, does not mean the convergence of the two streams. Convergence, as I will postulate later, goes beyond the mutual borrowing of concepts. I will first begin by giving a brief description of these early works in sections 2.3.1 to 2.3.3.

2.3.1 Argyris and Schön (1978)

The pioneering work of Argyris and Schön (1978) is frequently quoted, and their work has influenced many organizational learning theorists (Lipshitz, 2000). Their work falls primarily under the Social Psychology theme and their contribution to Management Science is seen in their description of error detection and correction, single-loop and double-loop learning. Due to the emphasis on learning processes and the descriptive nature of their research, I have placed their work in the organizational learning stream.

The work of Argyris and Schön deals primarily with learning processes of individuals. Individuals are conditioned, probably from childhood (Argyris, 2004; Cannon & Edmondson, 2001), to act defensively against embarrassment and threat. This defensive reasoning comes from a conditioned mindset (or mental model), and drives the individual to test any errors against the dominant beliefs and assumptions that generated these errors initially. This is termed as self referential logic, and any attempts to make the dominant beliefs and assumptions

transparent is covered up or by-passed to avoid embarrassment and threat. When such by-pass or cover up action is endorsed at the organizational level, it would over time re-enforce the individual's actions, to the point that it becomes tacit. These by-passes or cover up actions are the individual's theory-in-use and is universally common across cultures.

An individual could have an espoused theory which may be radically different from the dominant beliefs and assumptions of the organization. Surfacing the espoused theory would mean contradicting their theory-in-use. However, individuals usually act consistent with the theory-in-use inhibiting any double-loop learning. Argyris and Schön term this Model I–theory-in-use, and learning usually remains single-loop. Model II–theory-in-use results when the dominant beliefs and assumptions surface and the theory-in-use are tackled headlong (Argyris, 1995). Argyris and Schön achieve this through action workshops, especially using their two-column instrument (see Argyris & Schön, 1996). In this instrument, the individuals are requested to write on the right hand column what they would say and what they believe the other person would say in response. In this conversation, the feelings or ideas that would not be communicated would be noted in the left-hand column. By this technique, the operation of the espoused theories and theory-in-use would be made explicit. This type of interaction could foster double-loop learning.

However, the approach of Argyris and Schön has some deficiencies. Seo (2003) describes this Argyrisian approach as being cognitively biased and lacking sufficient emotional engagement. Another major deficiency is the application of Model I and Model II–theory-in-use from the individual to the organizational

level (Lipshitz, 2000). At the organizational level, the routines, procedures, policies, and culture of the organization conditions a preferred mode of behavior and generally inhibit double-loop changes. How individuals engage these constraints is not made clear. In other words, the translation of Model II-theory-in-use from the individual level to the organizational level is not clear and remains problematic (Lipshitz, 2000).

2.3.2 Senge's (1990) five disciplines

The work by Senge (1990) made some headway in bridging the deficiency noted in Argyris and Schön's approach. Senge (1990) elaborates five disciplines: personal mastery, mental models, shared vision, team learning, and systems thinking. The prescriptive approach of Senge (1990) places his work in the learning organization stream.

Team learning places emphasis on social relationships. It is through the foundation of good social relationships that dialogue takes place, involving a process of reflection and inquiry. Through dialogue, deeply held beliefs and assumptions can surface and the mental models can be re-framed (Isaacs, 1993), paving the way for a transition from Model I to Model II–theory-in-use. This is referred to as generative learning (Senge, 1990) or double-loop learning (Argyris & Schön, 1978). However, when this transition does not occur, learning results in the beliefs and assumptions remaining unchanged. This type of learning is adaptive learning (Senge, 1990) or single-loop learning (Argyris & Schön, 1978).

Personal mastery, shared vision, and systems thinking could be viewed as resources necessary for double-loop learning. Personal mastery is the individual's ability to continuously develop his or her own capacity to learn, and is a catalyst in the continuous attempt to re-frame the mental model. Shared vision is an organizational resource, whereby individuals share an image of the future they wish to create. The primary purpose of the shared vision is to build a sense of commitment and common direction. Systems' thinking is considered as the discipline that binds all the other disciplines together. It is the understanding of how a change can affect the intricate inter-relationships of the system as a whole.

Senge's implementation strategy involves the use of workshops to surface the areas of change, and to use focus groups in organizations to bring about those changes. During the process of implementation, more substantial work in developing a shared vision and working with mental models is done. This approach to implementation has resulted in practical difficulties, which are the major limitations of this five-discipline model. The five-discipline model implicitly brings in three levels of learning (see Figure 1.0): the individual level (mental models and personal mastery), the group level (team working and shared vision), and the organizational level (systems thinking). Lam (2001) views these levels as logical stages through which a learning organization evolves. However, Senge (1990) ignores the barriers which inhibit the transfer of learning between these levels. An interesting practical application of Senge's five disciplines, in a Swiss tool manufacturing organization, highlighted these barriers to learning transfer (Steiner, 1998). In addition, Senge's five disciplines are weak in explicit knowledge management. They do not focus on the systems and structures of the organization that are necessary to store and manage explicit knowledge.

2.3.3 Huber's (1991) four constructs

Huber's (1991) four constructs of information acquisition, information distribution, information interpretation, and organizational memory can be considered as the information processing perspective of a learning organization. Huber's focus on information management, and the prescriptions he postulates in order to conceive an organization as an interpretive system, can be considered as normative (Hong, 1999). This is why Huber's (1991) work can be placed in the learning organization stream. The constructs address one of the weak areas of Senge (1990), especially explicit knowledge management. The strength of Senge (1990) in considering the softer aspects of the organization is interestingly the weakness of Huber's four constructs in building a learning organization.

'Information acquisition' is the most developed of the four constructs and deals with the processes through which an organization acquires information and knowledge. It contains five sub-constructs of congenital learning (knowledge residing at the birth of the organization), experiential learning (learning from experiences within the organizations), vicarious learning (learning from experiences of other organizations), grafting (bringing in learning by acquiring other organizations or by absorbing new members who possess knowledge previously not available), and searching and noticing (scanning the external environment). The emphasis paid to the external environment is an important contribution, especially in the current context of rapid change.

The 'information distribution construct' deals with the necessity of sharing information across the organization. The necessity to communicate and distribute

information is considered to be a significant factor in the success of learning organizations and requires an underlying value of trust between management and employees (Gardiner & Whiting, 1997).

The third construct is 'information interpretation'. There are four sub-constructs involved: cognitive maps and framing, media richness, information overload, and unlearning. These sub-constructs have links to Senge (1990) and to Argyris and Schön (1978). The sub-construct of cognitive maps is linked to Senge's discipline of mental models. Individual interpretation of information is shaped by their mental model or cognitive framework. There is a possibility of having varying cognitive maps of individuals belonging to different units in the organization. Huber (1991) also suggests that the extent to which shared information is given common meaning is dependent on the richness of the media used. The sub-construct of information overload deals with its counter productive effect on interpretation. Overload clearly detracts from effective interpretation. The sub-construct of unlearning has links to Argyris and Schön's (1978) work. To consciously unlearn existing knowledge and behaviors, one needs to engage the defensive routines and alter the dominant beliefs and assumptions. This is Model II–theory-in-use.

The fourth construct of 'organizational memory' deals with the need to store learning so that it can be retrieved by a variety of individuals in the organization. Apart from the obvious weakness of inadequate emphasis on the softer aspects of the organization, Huber's (1991) four constructs also suffer from the following weaknesses:

- The emphasis on information systems lends Huber's four constructs to explicit knowledge management. Explicit knowledge can be coded and institutionalized into systems, structures, and routines in the organization. However, tacit knowledge management, which is considered more strategic (Nonaka & Takeuchi, 1995; Rivkin, 2001), is not sufficiently considered. Tacit knowledge lies in the body and minds of individuals and cannot be easily explicated. Explication requires the use of extensive socialization and metaphors (Nonaka & Takeuchi, 1995).

- Huber's four constructs can be broken down into the three levels of learning. Knowledge acquisition is at the individual level, information distribution and interpretation can be considered at the collective or group level, and organizational memory can be considered at the organizational level. The practical application of Huber (1991), in building a learning organization, would face similar difficulties to the Senge concepts, as the barriers to learning transfer have not been sufficiently considered. Some learning barriers such as workload, power status, information relevance, frequency of interactions, expected results, and information distribution costs have been posited to negatively influence information sharing. This however is insufficient when one considers learning transfer across all levels of learning in the organization.

I have given a brief description of some of the early, but significant, work on organizational learning and the learning organization. I will now review some later, but influential models of organizational learning and the learning organization, to demonstrate how these early works have influenced them and how the concepts have crossed the two streams.

2.3.4 The influence of the early works

The organizational learning research prior to the 1990s would have elements of Argyris and Schön's (1978) work. Lipshitz (2000) shows references to Argyris and Schön (1978) in the research done by Hedberg (1981), Fiol and Lyles (1985), and Levitt and March (1988). However, research done after the 1990s also contains elements of Huber (1991) and Senge (1990), in addition to the influence of Argyris & Schön (1978). To establish this, some of the most frequently cited authors on organizational learning from 1990 onwards were derived from the Social Science Citation Index (SSCI) database. The work of Nonaka (1994) was chosen with exhaustive treatment of tacit and explicit knowledge creation. The "4I" model by Crossan et al. (1999) was chosen from the Academy of Management Review. The "4I" model explicitly considers the three levels of learning (i.e., individuals, group, and organizational). The influence of the early works on Nonaka (1994) and Crossan et al. (1999) is shown in Table 2.0.

Similarly, learning organization models would also contain elements of the early works. I have chosen the following models (from the SSCI database): Garvin (1993), Watkins and Marsick (1996), Dibella and Nevis (1998), and Drew and Smith (1995). These models were not only frequently cited, but validated with extensive practical implementations. This is reflected in Table 2.1.

Table 2.0 – Influence of Early Work on Organizational Learning Researchers

Models	The Research Theme	Link to Argyris and Schön (1978)	Link to Senge (1990)	Link to Huber (1991)
Crossan et al. (1999)	Three levels of learning are considered: (**I**)ntuiting at the individual level, (**I**)nterpreting and (**I**)ntegrating at the group level, and (**I**)nstitutionalizing at the organizational level. Intuiting is the perception of patterns and possibilities. Interpreting operates at the conscious level of the individual involving the conceptual map. The conceptual map is challenged through a process of dialogue. Integrating involves the development of a new shared understanding. Institutionalizing is the transfer of new explicit knowledge into organizational memory.	The operation of model II theory-in-use is seen in the area of (I)nterpreting. This is where individuals, through dialogue, would surface their deeply held assumptions and beliefs and reframe their conceptual maps.	The conceptual map described under (I)nterpreting is Senge (1990) mental model. However, the continuous challenging of one's beliefs and assumptions would also depend on the personal mastery of individuals. The process of (I)ntergrating in the group occurs through the discipline of shared vision, and team working and collaboration.	The four constructs operate with all of the 4i's. (I)ntuiting requires acquisition of information. (I)nterpreting is seen in the information interpretation construct. (I)ntergrating requires information dissemination. (I)nstitutionalizing is the organizational memory construct.
Nonaka (1994)	Knowledge creation is a social process and centers on individuals. The interaction of tacit and explicit knowledge results in four modes of knowledge conversion: tacit to tacit (Socialization), tacit to explicit (Externalization), explicit to tacit (Internalization), and explicit to explicit (Combination). The four modes can spiral from individual to collective to organizational and inter-organizational. The knowledge creation process is mapped to five interlinked phases: (1) Enlarging individual's tacit knowledge through variety of experiences as well as a personal commitment to learn (2) Externalizing and sharing tacit knowledge through a socializing process (3) The new knowledge must be crystallized through a process of internalization and result in some concrete product or new system (4) Justification and quality of knowledge created. This involves judging the usefulness of the knowledge created (5) Networking knowledge ("middle-up-down" process). This involves the use of middle level managers to interpret the grand vision of the top to the realities on the shop floor. The above process is supported by enabling conditions such as commitment by individuals, redundancy, and requisite variety.	Double-loop learning is operationalized into everyday activities. The process of externalization requires the surfacing of one's deeply held assumptions and beliefs. Nonaka uses metaphors to bring this out, and is the Model II–theory-in-use in day-to-day action. The process of error detection and correction by Argyris and Schön (e.g., single order and second order error-detection and correction) could be considered as information processing view of learning. This to some extent is seen in the combination mode described by Nonaka (1994).	The emphasis for individuals to expand their tacit knowledge and their commitment to learning is related to the discipline of personal mastery. Nonaka places emphasis on teams and their social interactions in externalization and internalization. This is linked to the discipline of teamwork. An important phase in the knowledge creating process is the justification of the knowledge created. The new knowledge must be viable and contribute to the shared vision of the organization. The networking of knowledge requires the middle level manager to play the critical role of "middle-up-down" knowledge and information transfer. This requires the discipline of systems thinking.	Some of Huber's sub-constructs are seen in Nonaka's theory: • Contact with the external world in order to create fluctuations, has links to information acquisition. • The operation of the mental model and the need to unlearn old practices are seen in the knowledge conversion processes. These are sub-constructs of Huber's interpretation structure. The externalization and combination requires knowledge to be made explicit. The process of crystallization requires the new knowledge to be either seen in new products or re-constructed systems and procedures. This is seen in Huber's organizational memory construct.

Source: *Sun and Scott (2003a)*

Table 2.1 –Influence of Early Works on Learning Organization Researchers

Models	The Research Theme	Link to Argyris and Schön	Link to Senge (1990)	Link to Huber (1991)
Garvin (1993)	The emphasis is that learning must result in change in behavior. The five building blocks described are: systematic problem solving; experimentation with new approaches; learning from own experience and past history; learning from experiences and best practices from others; transferring knowledge quickly through the organization.	Experimenting with new approaches contains on-going programs (single-loop learning), and demonstration projects (double-loop learning)	Not following systematic problem solving would result in the "Shifting the burden" archetype. Senge refers to the on-going program as adaptive learning, and demonstration projects as generative learning.	The four constructs considers most aspects of the building blocks: learning from own experience and past history; Learning from experiences and best practices from others; Transferring knowledge quickly through the organization.
Watkins and Marsick (1996)	The 7 dimensions of the learning organization are: creates continuous learning opportunities; dialogue and inquiry; collaboration and team learning; evolving a collective vision; systems to capture learning; connects the organization to its environment; strategic leadership.	The connection to Argyris and Schön is seen in dialogue and inquiry where deeply held assumptions and beliefs are surfaced, promoting Model II–theory-in-use.	The discipline of teamwork and shared vision is seen in two of the seven dimensions of Watkins and Marsick.	Establishing system to capture and share learning, and connecting the organization to its external environment, is captured by Huber's four constructs.
Dibella and Nevis (1998)	The three characteristics of the learning organization are learning orientation, facilitating factors, and learning process. The six learning orientations are: (1) Preference for developing knowledge internally versus acquiring external knowledge; (2) Product versus process focus; (3) Documentation mode: personnel versus public; (4) Dissemination mode: formal versus informal; (5) Learning focus: incremental versus transformational; (6) Skill development: individual versus group. Facilitating factors are enablers that make learning easier in the organization. The eight facilitating factors are: (1) Scanning imperative and performance gap; (2) Concern for measurement; (3) Experimental mindset; (4) Climate of openness; (5) Continuous education; (6) Involved leadership; (7) Articulation of the vision; (8) Systems perspective.	The researchers go in depth to describe the defense routines of the organization and how it affects individual, and group level learning interactions. This has had an influence on their facilitating factor of "experimental mindset ". They use similar rhetoric used by Garvin (1993). They consider the experimental mindset to take two forms: (1) On-going programs. This is similar to single-loop learning of Argyris and Schön; (2) Demonstration projects. This is similar to double-loop learning by Argyris and Schön.	Four disciplines of Senge (1990) are clearly seen in the facilitating factors: (1) Experimental mindset requires re-framing of mental models; (2) Continuous education has links with the discipline of personal mastery; (3) Involved leadership has a strong emphasis on articulating and implementing a shared vision; (4) Systems perspective is clearly the discipline of systems thinking.	Three of Huber's four constructs are clearly seen. Information acquisition and information dissemination are seen in the learning orientation, whilst the construct of information interpretation is seen as a facilitating factor. Knowledge source and the dissemination mode are clearly linked to Huber's information acquisition and information dissemination constructs respectively. Concern for measurement (a facilitating factor) has a strong link to Huber's information interpretation construct.
Drew and Smith (1995)	The learning organization has three elements: (1) Focus - means a clear sense of shared vision; (2) Will - the desire to stretch oneself, and the ability to work towards challenging targets; (3) Capability - the unique ability to leverage the core competencies of the organization.	"Will" requires individuals to overcome potentially embarrassing situations. The operation of Model II–theory-in-use becomes integral in the element of "will".	"Focus" requires a shared vision. "Will" has a clear link to personal mastery. "Capability" requires team working and systems thinking.	The core competencies of organization that are institutionalized require organizational memory. Huber (1991) describes this as one of his constructs.

Source: *Sun and Scott (2003a)*

As shown in Tables 2.0 and 2.1, the mere presence of elements of the early works, with borrowed concepts by both the streams, does not mean that the streams have converged. My experience as a practitioner in attempting to build a learning organization has thrown light on the gap that exists between the two streams. Learning organization models come up with much rhetoric and they often describe the interventions or prescriptions that constitute the model. Often, in practical implementations one comes across barriers that prevent the achievement of the ideals set out by the learning organization practitioners. The reasons for this are:

- Limited understanding of the barriers that impede the transfer of learning across the learning levels in the organization (see Figure 1.0 in page 4). Learning barriers exist when transferring learning from the individual level to the level of the organization (i.e., in the feed forward learning). Similarly, learning barriers exist in the transfer of learning from the organizational level to the individual level (i.e., in the feedback learning).

- Limited practical understanding of the triggers that spur the need to survive and learn.

- Limited understanding of how the prescriptions that form the learning organization model impact the learning processes.

The above reasons are symptoms of the major gap that exists between the two streams. In the section to follow, I will propose a theoretical framework that seeks to provide a link between the two streams.

2.4 Theoretical Framework that Links the Two Streams

As discussed previously, organizational learning is the domain of academics, and concerns the socio psychological process of learning in the organization (i.e., how does the organization learn). A learning organization is the domain of practitioners and describe a particular form or type of an organization (i.e., how should an organization learn). The former is the descriptive strand whilst the latter is the prescriptive strand. In order to avoid adding to confusion, I would like to offer my precise definition characteristics that would distinguish the two steams of organizational learning and the learning organization:

Organizational learning: *"This is the learning process used in the organization. It deals with the question of how individuals in the organization learn. The change in cognition is a necessary condition."*

Learning organization: *"This is where learning takes place that moves an organization towards a desired state. Thus, learning must transfer from individual(s) to collective(s) to organizational to inter-organizational, and vice versa, and 'must' result in changes in behavior. If it does not result in changes in behavior, then genuine transference has not taken place."*

In the above definition characteristic of the learning organization, I have considered inter-organization as an additional level of learning. This is to cater for situations where an organization is in a strategic alliance, and requires learning between the inter-organizational partners. The definition characteristics offered

above will be the basis on which a theoretical framework will be built linking the two streams. The growing divide and the confusion between the terminologies of organizational learning and the learning organization necessitate this theoretical framework. The broad basis of this theoretical framework would involve:

- An understanding of the barriers that exist in the learning transfer between the levels of learning in the organization.

- How these learning barriers impact, amongst other factors, the emotions of individuals in organizations.

- What are the disabling factors that would minimize these barriers?

- An understanding of survival anxieties (will be explained later). These survival anxieties spur an individual to learn by acting as triggers.

- How these survival anxieties and learning barriers impacts the learning processes.

Figure 2.0 below shows how the theoretical framework can link the two streams. Although individuals are the primary learning agents (Argyris & Schön, 1978; Huber, 1991), they do not learn independently. A more stable and productive form of learning occurs when individuals act as a collective or in a group (Cook & Yanow, 1993). The type of learning depends on the extent of learning barriers and survival anxieties, and results in either single-loop or double-loop learning (will be further elaborated in pages 41-43). The learning must then be transferred to the organization and even inter-organization (if applicable). However, this transfer of learning is impeded by learning barriers (see box B in Figure 2.0), and there should exist disabling factors to minimize them.
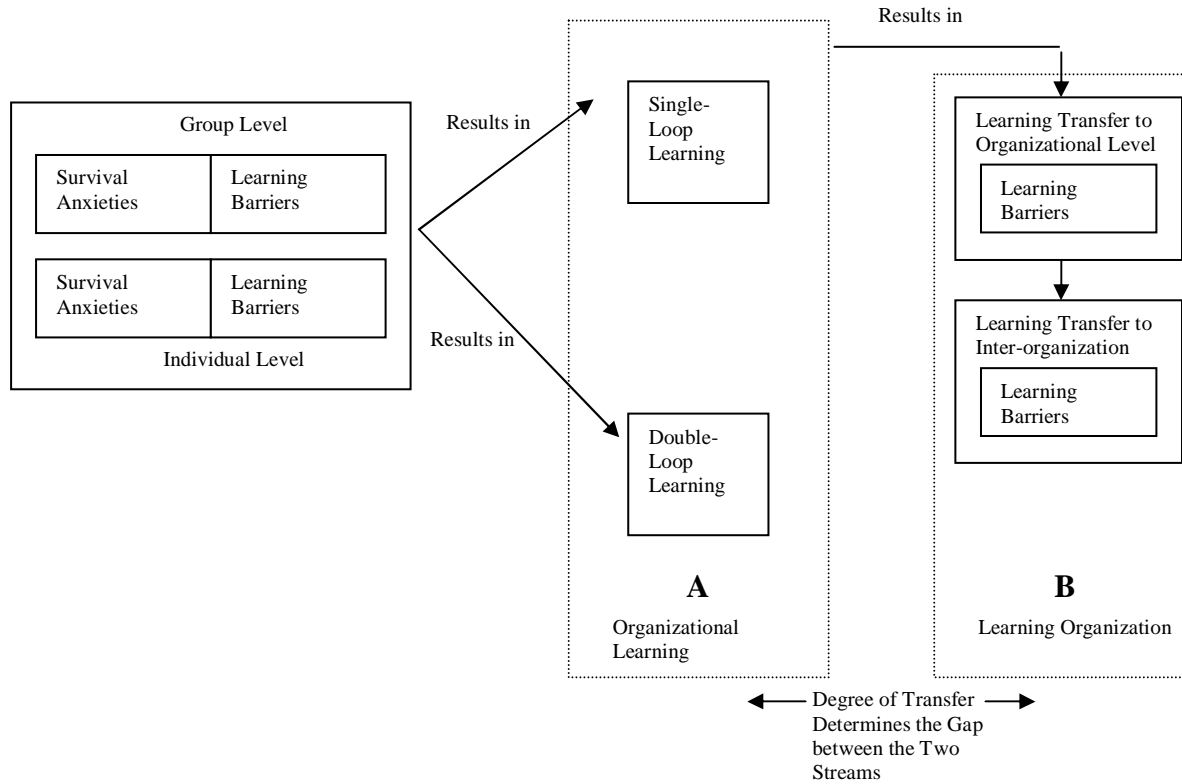
Figure 2.0 – The Broad Theoretical Framework Linking the Two Streams (Source: Adapted from *Sun & Scott, 2003a*)

Box A (see Figure 2.0 above) is the domain of the organizational learning theorists, whilst box B (see Figure 2.0 above) is the domain of learning organization practitioners. Therefore, the degree of transfer of learning, across the levels of learning, determines the gap between the two streams (see Figure 2.0 above). It is the learning barriers that continue to perpetuate the gap between the descriptive organizational learning stream and the prescriptive learning organization stream.

In order to further elaborate on Figure 2.0 above, I now introduce the significant contribution made by Edgar Schein to the discipline of organizational learning. His posting to the Korean War, where he analyzed the impact of anxiety on American prisoners of war, was a primary influence on his research. The anxiety of individuals helps us to understand the initiation of learning. Schein (in Coutu, 2002) describes two types of anxieties: learning anxiety and survival anxiety. Learning anxiety is described as being afraid of trying something new. It is the fear that it might be difficult to change, cast the person as a deviant from the group they belong to, make the person look stupid and thereby threaten self esteem. Schein refers to this as "Anxiety 1": "feelings associated with an inability or unwillingness to learn something new because it appears to be difficult or disruptive" (p. 86).

Anxiety 1 is therefore a particular type of learning barrier, with a focus on the psychology of individuals. It considers only anxieties brought about by conditioned learning in the organization (Schein, 1993). There are other aspects such as workload, liking, or feeling comfortable with one another (based on social relationships), and skills in communication and persuasion that cannot be

explained by Anxiety 1. Another weakness of Anxiety 1 is the lack of emphasis on the learning levels and learning transfer. This is why, in Figure 2.0 above, I use the more general term "learning barrier" instead of Anxiety 1, at the individual/group level.

Survival anxiety is said to be the horrible realization that one might not survive if changes do not take place. The individual then becomes open to the possibility of learning (Schein, 1993; in Coutu, 2002). Schein describes this as "Anxiety 2," which can be either the physical survival of self/organization, or psychological survival of self. Examples of physical survival of self and the organization:

- Our competitor(s) is/are getting ahead of us.

- Unless we learn and change, our jobs are at stake or our careers are at stake.

- Unless we improve our processes/technology, we will continue to be stressed with heavy workload due to inefficient systems/technology.

- Unless we improve, we will continue to face criticism from our customers and stakeholders.

The psychological survival of self is the need for cognitive enhancement. Some examples of this type of survival anxiety are:

- This is something new. It will enhance my knowledge base.

- It will add value to me as an employee or in the field of specialization (by widening my experience, learning, and enhancing my reputation).

- This is something interesting. It will give me personal satisfaction to explore this.

Schein contends that learning is initiated only if survival anxiety exceeds the learning barriers. However, at what level of difference between survival anxiety and the learning barriers would double-loop learning arise? There is anecdotal evidence to suggest that survival anxieties can bring about contradictions in the organization (Seo & Creed, 2002), and will drive the mental model to a discomfort zone, thereby increasing the possibility of a redefinition (Oswick, Keenoy, & Grant, 2002). However, this depends on the extent of learning barriers. An undue amount will only result in single-loop learning with the operation of Model I–theory-in-use. An acceptable level of learning barriers can result in double-loop learning with the operation of Model II–theory-in-use. This operation of the survival anxieties and the learning barriers, within an individual, usually occurs in the context of a collective or a team (Senge, Kleiner, Roberts, Ross, Roth, & Smith, 1999). It results in the cyclical process of "reflection" and "action" (Edmondson, 2002), generating either single-loop or double-loop learning (see Figure 2.0). The learning must then be explicated and transferred to the organization (and inter-organization if necessary) for learning to be deemed useful. This would result in changes in the form and behavior of the organization, satisfying the practical definition of learning organization that was given earlier.

2.5 Previous Attempts to Minimize the Divide

In this section, I will describe two learning organization models that consider, to some degree, barriers to learning transfer. It thus bears some resemblance to the framework suggested in Figure 2.0. While not necessarily a primary intention of these authors, each piece contributed to narrowing the gap between the two streams. These works did not arise out of rigorous research but rather out of the authors varied experiences in consulting practices. The works are: "Tools for a learning organization" by Pearn, Roderick, and Mulrooney (1995), and "Dance of change" by Senge et al. (1999).

2.5.1 Pearn et al. (1995)

Pearn et al. (1995) specifies five components that describe a practical approach for building a learning organization:

- Learning as a prime asset

- Meeting individual needs and organizational objectives.

- Utilization of full potential for learning.

- A climate of continuous learning.

- Blockages removed and enhancers put in place.

Learning is considered a prime asset of the organization. To optimize this asset, the other four components of meeting individual needs and organizational

objectives, utilization of full potential for learning, a climate of continuous learning, and removing blockages and installing enhancers, are necessary actions that need to be instituted. Perhaps, a significant contribution by Pearn et al. (1995) is the recognition of blockages or barriers to learning transfer. These barriers are mostly individual and organizationally based and exist when transferring learning from the individual to the organizational level. Examples of individual barriers are: learned helplessness, managers who believe they know all the answers, managers hooked on status, the entrenched view that learning stops in the classroom, and those imbued with 'not invented here' syndrome. Examples of organizational level barriers are: too many management levels, functional separatism, workers confined too narrowly to defined tasks, bureaucratic culture, and individuals who are treated as brain dead.

They elaborate these barriers and the enhancers (I refer to enhancers as disablers in Figure 2.0). They also specify enabling structures that provide a mechanism to support continuous learning. An analogy of a hot air balloon is used to describe the interaction of these various factors: barriers, enhancers, and enabling structures. However, Pearn et al. (1995) do not show the link between the barriers to learning and the enhancers, and their link to the learning processes is not made clear.

2.5.2 Senge et al. (1999)

Perhaps the approach that comes closest to my theoretical framework described in Figure 2.0 is the "*Dance of Change*" (Senge et al., 1999). Senge et al. (1999) describe ten challenges (i.e., learning barriers), that a pilot group faces in the

organization when implementing double-loop learning and change. They describe the ten learning barriers as:

- We don't have time for this stuff.

- We have no help. We do not know what we are doing.

- This stuff isn't relevant.

- They (i.e., management) are not "walking the talk."

- Am I safe? Am I adequate? Can I trust others? Can I trust myself?

- This stuff isn't working.

- We have no idea what these people (i.e. the pilot group) are doing.

- They (i.e. the management) won't give us power.

- We keep "re-inventing the wheel."

- Where are we going? What are we to do?

These ten learning barriers heighten the negative emotions of individuals in the pilot group, affecting their learning capabilities. There is fear and frustration due to loss of credibility, lack of understanding, and criticism by others in the organization. For these learning barriers, Senge et al. (1999) describe some disablers that would minimize them. They also provide three growth resources (i.e., key disablers): business results that build credibility, personal results, and networking and diffusion. These key disablers would lessen the impact of the learning barriers by increasing enthusiasm and willingness to learn, increasing learning capability, and increasing credibility. Figure 2.1 below represents the "Dance of Change". However, Senge et al. (1999) have the following deficiencies:

- The emphasis is on transfer of learning between the focus group and the organization. Insufficient attention is paid to the other levels of learning.

- As with Senge's (1990) five disciplines, the attention paid to systems and structures for knowledge management (to support the learning process) is inadequate.

Growth Resources
(Key Disablers)

Pilot
Group

Lessens the
Learning Barriers

Impacts the Learning
Capabilities

Pilot
Group

Ten Challenges
(Learning Barriers)

Heightens the
Learning Barriers

Disablers to Minimize
the Learning Barriers
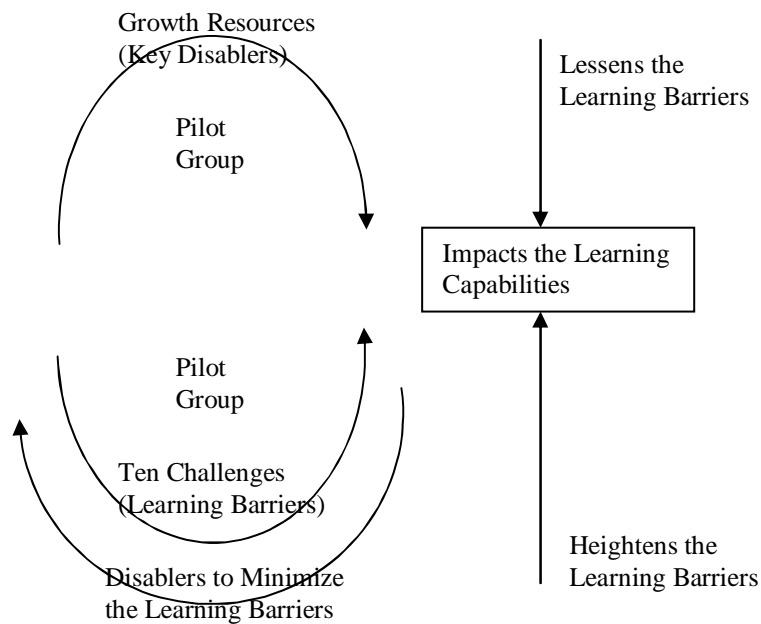
Figure 2.1 – Diagrammatic Representation of "Dance of Change" (Source: *Sun & Scott, 2003a*)

2.6 Summary of Contribution to Knowledge

By synthesizing the literature on organizational learning and learning organization, and theorizing a framework that bridges the gap between the two streams, this chapter makes a contribution to knowledge. The framework clearly separates the organizational learning stream (Box A in Figure 2.0) from the learning

organization stream (Box B in Figure 2.0). Organizational learning is the socio psychological process of learning in the organization, whilst a learning organization is to do with the capability to change the form or behavior of the organization.

In this theoretical framework (Figure 2.0), I suggest that the extent of divide between organizational learning and the learning organization is the degree of learning transfer that can take place across the levels of learning. This learning transfer is affected by the learning barriers. An awareness of these learning barriers, in a given organizational context, will greatly enhance the practical implementation of a learning organization.

2.7 Further Research that is Needed

Figure 2.0 above describes how the learning barriers affect the learning transfer, and thus perpetuates the gap between organizational learning and the learning organization. However, there is little understanding, from a holistic perspective, of what these barriers to learning are, and how they affect the levels of learning in the organization. Therefore, the question that needs to be given further attention is: *Q2: "What are these barriers to learning transfer and how do they impact the levels of learning in the organization?"* This question forms the basis of the investigation described in Chapter 3.

CHAPTER 3

INVESTIGATING BARRIERS TO LEARNING TRANSFER AND THEIR IMPACT ON THE LEVELS OF LEARNING

Q2: "What are these barriers to learning transfer and how do they impact the levels of learning in the organization?"

3.1 Introduction

Chapter 2 synthesized the extant literature on organizational learning and the learning organization streams. It also postulated that the gap between the two streams is determined by the extent of learning transfer across the levels of learning (i.e., from individual, to the group, to organizational, and inter-organizational levels). Therefore, one challenge that results is how to translate that individual learning, especially double-loop learning, into groups and the wider organization, so that organizational behaviors change with the altering beliefs and assumptions (Argyris & Schön, 1996). It is in this transfer of learning across the levels of learning that barriers arise.

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Massachusetts Institute of Technology's (MIT) systems dynamic group has studied the capability of the mental models of individuals to deal with dynamic complexities, and therefore has addressed learning barriers in a controlled laboratory setting (Sterman, 2001). Although mental models have been found to constrain learning in such dynamic complexities, this interest in individuals has not been matched by studies into the far more complex context of what creates learning barriers in an organization.

Therefore, in so far as I could determine, the body of literature on organizational learning and the learning organization is, with few exceptions, deficient in the major area of barriers to learning in an organizational context. In addition, existing studies are dispersed with little evidence of efforts to accumulate the research work (for an exception see Berthoin Antal, Lenhardt, & Rosenbrock, 2001). The difficulty of working with this fragmented history is compounded by a theoretical bias: Scholars, who have been developing models of organizational learning and the learning organization, tend to skew their research, by basing it on a premise of idealness. From this premise, barriers to learning are framed explicitly as aberrations from idealized norms (e.g., Crossan et al., 1999). Given these circumstances, this chapter aims to contribute to existing knowledge by:

- Synthesizing the extant, but scattered, literature, to theorize, from a more holistic and systemic perspective, the dimensions of learning barriers as to-be-expected occurrences. In taking this synoptic review, I identify five key dimensions of learning barriers: intrapersonal, relational or interpersonal, cultural, structural, and societal. This is dealt with in section 3.2.

- Conducting an exploratory empirical study to understand how learning barriers affect the levels of learning in the organization. This is dealt with in section 3.3.

3.2 Dimensional View of Learning Barriers – A Synthesis of Extant Literature

In mathematics, dimension refers to the number of coordinates required to locate a point in space. Learning barriers are like points in the organizational space, determined by a combination of factors, similar to coordinates, which inhibit organizational learning. These arise from the different levels of learning in the organization. Learning barriers are rarely just a single factor, but rather a combination of factors that combine to inhibit organizational learning. The factors can consequently be grouped and categorized into dimensions, and assigned as axes in the multidimensional organizational space. It is therefore appropriate to synthesize the factors that inhibit organizational learning into key dimensions.

The dimensional view of learning barriers is alluded to in current literature on organizational learning: Argyris and Schön (1996), for example, refer to individual defensive reasoning (i.e., individual tendencies to by-pass embarrassment and threats) and organizational defensive reasoning (i.e., systems, procedures, policies, and actions preventing individuals experiencing embarrassment and threats). Such categorizations recognize that factors inhibiting

organizational learning arise from the intrapersonal and cultural dimensions, and act in combination rather than singularly. Rahim (2002) makes an allied, and vital, connection via the impact of conflict on organizational learning, to show how organizational learning, especially double-loop, can be enhanced with effective conflict management. This means "changes at the macro level in the organization so that substantive conflict is encouraged and affective conflict is minimized at the individual, group, intergroup, and organizational levels" (Rahim, 2002, p. 215). In this insight, Rahim (2002) recognizes that factors inhibiting organizational learning can come from any inconsistencies in interpersonal relationships (termed as affective conflict), and from task or content related issues (termed as substantive conflict), arising from the levels of learning in the organization. Therefore, there is a recognition that factors inhibiting organizational learning can be categorized into various dimensions, and can act in combination to generate learning barriers. With this dimensional view of learning barriers, I have identified, synthesized and elaborated five key dimensions of learning barriers: intrapersonal, relational, cultural, structural, and societal.

3.2.1 Intrapersonal dimension

Contributions to the study of the intrapersonal dimension have primarily come from the field of psychology, and more recently, psychodynamics. Three factors inhibiting organizational learning constitute the intrapersonal dimension: emotional constraints; psychological tendencies; and cognitive constraints.

Emotional constraints: Studies of the effects of emotions in organizational learning are recent and not very extensive (Fineman, 1996; Scherer & Tran, 2001;

Seo, 2003). From a review of literature, I have singled out, due to their potency in inhibiting double-loop learning, two types of emotional constraints: narrowing of perception due to strong negative emotions, and negative consequences of positive emotions.

The narrowing of individual perceptions can result from strong negative emotions. An individual's self-esteem is shaped by his or her economic, social, and psychological well-being (Seo, 2003), and is usually entrenched in their work contribution, status, position, and social relationships in the organization (Seo & Creed, 2002). Pierce and Gardner (2004) go so far as to suggest that such self-esteem is organizationally based. By adopting a double-loop learning approach, participants potentially alter the organizational context, which in turn impacts on the self-esteem of individuals (Brown & Starkey, 2000). This draws strong negative emotions (Seo, 2003), such as fear, anxiety, distress, and pessimism. All of these, either singularly or in conjunction, are capable of narrowing the perceptions of individuals (Fredrickson, 2001). Schein (1993) refers to such a situation as Anxiety 1, where there is inability or unwillingness to learn because it appears to be difficult and disruptive.

The second type of emotional constraint is the negative consequence of positive emotions. Unlike the emotional constraints, which are based largely on strong negative emotions, this arises from strong positive emotions such as satisfaction, contentment, and pride, which are classified by Scherer and Tran (2001) as achievement emotions. Although positive emotions have a positive effect on morale and job satisfaction, they can inhibit double-loop learning. They tend to elevate the self-esteem and confidence of individuals, especially those in the

dominant coalition, resulting in the overprotection of the dominant routines that have brought success in the past (Probst & Raisch, 2005). These positive emotions tend to embed the current cognitive maps of the dominant coalition, resulting in the application of previously-useful perceptual filters to the acquisition, interpretation, and dissemination of new information (Brown & Starkey, 2000). This causes ambiguity in learning, especially in interpreting a complex dynamic environment (Levinthal & March, 1993; Steiner, 1998; Sterman, 2001). Therefore, short term symptomatic relieving solutions, which use existing competencies, are privileged over the longer term options (Levinthal & March, 1993; Tucker, Edmondson, & Spear, 2002), and existing or familiar technology is privileged over exploitation of new, yet potentially superior, technologies. The former is referred to as temporal myopia and the latter as spatial myopia (Levinthal & March, 1993).

Psychological tendencies: This inhibiting factor deals with tendencies towards certain social psychological behaviors. I have singled out two types of such tendencies from the literature as being crucial inhibitors of double-loop learning: individual defensive reasoning and fundamental attribution error.

Individual defensive reasoning is the conditioning of individuals to act defensively against threatening and embarrassing situations. This had been dealt with in Section 2.3.1; however, a repetition of this discussion is appropriate. Defensive reasoning results from individuals using a defensive reasoning mindset (NB the terms mindset, mental models, and cognitive framework are used interchangeably). The mindset governs the individual's sense making process. In the case of a defensive reasoning mindset, claims are tested against the same logic

that initially generated it (Argyris, 2004). Argyris terms this self-referential logic; and any attempt to make the governing logic transparent is covered up in order to prevent embarrassment and conflicts. Such by-pass or cover-up actions, when endorsed at the organizational level, would, overtime, reinforce the individual's use of the governing logic to the point it becomes tacit (Argyris, 2004). The by-pass or cover-up actions thus become the individual's theory-in-use.

Such theories-in-use are regarded as universally common across national cultures (e.g., face saving as a theory-in-use), even though the form of usage may vary (Argyris, 2004). Unfortunately, this tendency is conditioned from childhood (Rahim, 2002) and is heightened by organizational factors such as political concerns (Cannon & Edmondson, 2001). However, when an espoused theory that fits their intellectual background exists, and the surfacing of such espoused theory contradicts their theory-in-use, individuals often act in ways consistent with their theory-in-use. Moreover they can be unaware of this discrepancy in action, especially when the situation is embarrassing or threatening (Argyris, 2004). When such underlying issues do not surface, they inhibit learning, termed by Argyris as Model I–theory-in-use. This defensive reasoning leads to individual behavior such as establishing favorable stories in order to suppress or dilute bad news, especially with regards to one's learning outcome (Levitt & March, 1988). Such behavior can damage an organization in several ways. Firstly, questionable significance is conferred to an outcome that may be inappropriately connected to the learning involved, and results in unsound routines and processes being institutionalized. Secondly, when the current practices of the organization, which are the result of past learning, fail, a rosy interpretation of the situation will reduce

the search for new alternatives, in ways that inhibit double-loop learning (Levinthal & March, 1993).

Fundamental attribution error is the second type of psychological tendency. It attributes aberrations in behavior to human factors or special circumstances, rather than to systems and structures (Sterman, 2001). Accordingly, it moves the focus of management away from improving the systems and structures, and towards the search for more competent people to do the job, which is often expensive in Human Resources terms.

Cognitive constraints: This is the third factor constituting the intrapersonal dimension. It concerns someone's cognitive readiness to learn and is an individual level ability. Individuals differ in their cognitive ability and processing speeds (Hale & Jansen, 1994), and therefore differ in their cognitive readiness to learn. Some individuals assimilate complex and ambiguous information and gravitate to the new and unknown, whilst others do not share those capabilities to the same extent.

3.2.2 Relational dimension

Learning can occur as self reflection. However, in the organizational context, learning must, as is implied in the organizational learning literature (e.g., Nonaka & Takeuchi, 1995), include a relational process especially when double-loop learning is involved. Learning barriers, which arise from poor relationships, can result in ineffective information sharing at the group and organizational level, and loss of valuable tacit learning associated with relationships.

Information sharing is extensively studied by group communication theorists, and, lately, in research on the emotional intelligence of groups (Druskatt & Wolff, 2001). As group members become familiar with one another, and develop values of honesty and trust, they become more comfortable in sharing sensitive information. They handle conflicting and diverging ideas positively and enrich the solution finding process (Propp, 1999). Dialogue is the term used to describe such a process at the group level. Unhealthy relationships are characterized by such negative effects as polarizing individuals, withholding information, and frequent misinterpreting. All of these combine to create learning barriers.

At the organizational level, the amount of information sharing between hierarchies is dependent on the extent of their coupling, which is relationally based (Denis, Lamothe, & Langley, 2001). The strength of the coupling, especially between the leadership group and the organization, is dependent on the strength of the relationship (especially concerning credibility between the hierarchies). Weak coupling results in barriers to the sharing of information (especially sensitive information), and hence widens the variance of the mental models between hierarchies. Developing a new shared understanding becomes problematic, resulting in difficulty in initiating double-loop learning.

Tacit learning associated with relationships can be craft-based tacit skills or process-based tacit know-how. Craft-based tacit skills represent expertise developed over time to the point that its elicitation and usage requires no conscious thought. The primary way such craft-based tacit skills are transferred is through an extensive period of socialization (Nonaka & Takeuchi, 1995). Relational constraints hinder such a transfer process, causing the organization to

lose these craft-based tacit skills, particularly through increased employee turnover in the absence of good relations. Process-based tacit know-how is seen as improvised ways of working, developed by individuals in their communities of practice (Holan, Philips, & Lawrence, 2004; Seely-Brown & Duguid, 1991). Such communities of practices have informal, usually undocumented, methods of working. They are, therefore, more process related than craft-skill related. Such process based tacit know-how has been described as transactive memory among community members (Moreland & Myaskovsky, 2000), or as encultured knowledge (Örtenblad, 2001). This encultured knowledge is a key determinant of their collective performance. It becomes increasingly critical in an environment of rapid change, and represents a non-replicable means of competitive advantage. Relational constraints hinder such know-how developing.

3.2.3 Cultural dimension

Organizational culture is intrinsic (Hofstede, 1998), and represents the collective values and beliefs held by the individuals in the organization. Such values and beliefs need not be held by all individuals in the organization. As long as they are held by the dominant coalition and influential individuals, they can be sufficiently pervasive (Hofstede, 1998).

Existing beliefs are maintained through a process of discourse (Barker, 1999), which can generate an organizational climate where existing beliefs are constantly reinforced, so that any questioning of cherished practices is discouraged. Even new members are rapidly socialized to the dominant beliefs of the organization, in a process that prevents the grafting on of new learning. I outline three key

inhibiting factors drawn from literature that constitute the cultural dimension: cultural orientation; organizational defensive routines; and leadership.

Cultural orientation: Organizational culture can reflect several orientations (Detert, Schroeder, & Mauriel, 2000), and at times unconsciously constrains individual cognition and action.   One such orientation, especially relevant as a learning barrier, is the organizational political orientation.   The organization's structure can decompose for political reasons (Berthoin Antal et al., 2001), creating a particular cultural orientation.   Managers in such structures assume certain positions of power where information is withheld, distorted, rationalized, and screened. These, therefore, can impact strongly on organizational learning, especially when it comes to the need for developing a new shared understanding in a double-loop change (Gudz, 2004).

Organizational defensive routines: The second factor constituting the cultural dimension is the organization's defensive routines (Argyris & Schön, 1996), which are extensions of the individual defense reasoning (especially of the dominant coalition), to the organizational level. The result is that certain theories-in-use in the organization are not questioned.   The organizational culture will institute processes, practices, and actions to avoid questioning dominant routines. This makes the 'undiscussable' not discussable, and thereby prevents any embarrassment and conflicts that may arise.   Argyris and Schön (1996) refer to this as Model I–O theory-in-use, resulting in an ultra-stable and anti-corrective organization (Argyris, 2004).   Such an organization usually institutionalizes conditioning apparatus, such as punishment, in preference to reward.   Schein (1993) describes the depth of ingraining when punishment is used to condition a

preferred mode of behavior. Even if the instrument of punishment is removed, such conditioned behavior is difficult to unlearn and tends to linger on. These ultra-stable organizations are also susceptible to type III error (Rahim, 2002), where the management focuses on the wrong problem due to their self-referential logic. Instead of focusing on the governing logic, which is often un-discussable and created the difficulty in the first instance, the problem is redefined using the same governing logic.

Leadership: Leadership is the third factor constituting the cultural dimension, because of its influence on organizational culture (Hofstede, 1998). Most individuals have a mindset that the responsibility for initiating learning rests with leaders (Johnson, 2002). This mindset creates challenges for organizational learning. It often leads to differences in mental models between managers and the lower level hierarchy (especially the shop floor), resulting in different interpretations of their role in learning (Steiner, 1998; Vassalou, 2001). Such a mindset is often the result of leadership action.

The influence of leadership on organizational learning is described in the literature (e.g., Johnson, 2002; Schein, 1993; Steiner, 1998; Watkins & Marsick, 1996), but the exact nature of its influence is not made clear. One way of analyzing the influence is through different leadership styles: the transformational and transactional styles of leadership (Vera & Crossan, 2004). A transformational style is usually inspirational: it questions existing beliefs, leads through enthusiasm and vision, and motivates the individual to move beyond self for the sake of the organization. A transactional style manages by setting goals,

articulates what is expected, provides feedback, and rewards according to goal achievement.

Brown and Posner (2001), in their survey of leaders, show that those who naturally gravitate towards variety and creativity are more prone to transformational leadership styles. This study supports some of the theoretical propositions of Vera and Crossan (2004), for whom a transformational style privileges the exploration of new learning. This style of leadership is useful in a dynamic environment. In contrast, the transactional style privileges the exploitation of existing learning and is more suited to a stable environment (Vera & Crossan, 2004). Therefore, the dominance of one style in an incompatible environmental context can create learning barriers.

3.2.4 Structural dimension

The structural dimension concerns the systematic organization of control and communication in the organization. Three factors, which can create learning barriers, constitute this dimension: organizational authority structures; the impact of the organizational communication structure on organizational learning; and group communication structure.

Organizational authority structures: An organizational structure can be centralized, or more organic, depending on the mix of control, costs and complexities. Such structures can evolve with organizational growth. Centralized structures are conventionally seen as top down in their decision making. Such top-down approaches encourage organizational bureaucracy, propagating the

dictates of senior management, thereby hindering organizational learning, especially double-loop learning (Vassalou, 2001). However, empirical studies do not conclusively support this view. Some recent studies show effective organizational learning happening in centralized structures (e.g., Berthoin Antal, Dierkes, & Marz, 1999).

Organic structures are more decentralized, allowing a greater degree of autonomy in decision making, effectively promoting organizational learning. However, Levinthal and March (1993) hold a differing view, suggesting that such structures are good for localized error diagnostics but poor in organization-wide error detection and correction. This stems from individuals being parochial, by focusing their attention on their subunit, which results in fragmented learning (Kim, 1993).

Organizational communication structure: The second factor constituting the structural dimension is the organizational communication structure. The challenge of an organization is to ensure that non routine information finds those individuals who need such information (Huber, 1991). Often, such non routine information resides within individuals or in some storage device that others are not aware of. This is described by Othman and Hashim (2004) as spatial amnesia. Also, in some instances, such non routine information is not properly captured, and hence lost for future use. This is described as accidental forgetting (Holan et al., 2004) or temporal amnesia (Othman & Hashim, 2004). Therefore, the availability, the physical accessibility, the amount of encoding required, and the cost of communicating through the communication channels, are structural

constraints that affect the capture and communication of such non-routine information, thereby affecting organizational learning (Huber, 1991).

Group communication structure: This is another key inhibiting factor at the group level. Group communication theorists have identified the size of the group and the composition of the group as structural constraints at the group level. Firstly, the larger the group size, the more difficult it will be to share information that individuals possess (Propp, 1999), and group work can become dysfunctional (Pearce, 2004). Secondly, learning at the group level is affected by its membership composition. A less heterogeneous membership reduces the likelihood of a higher quality decision being made due to more commonality and less diversity of information (Salazar, 1995). Status composition also affects information sharing. A higher status member will typically be provided with more opportunities to contribute than lower status members, and thus influence the importance and weight given to information (Propp, 1999; Smith-Lovin, Skvoretz, & Hudson, 1986).

3.2.5 Societal dimension

This dimension is caused by the form of the societal system in which the organization operates. In my literature review I identified it as an additional dimension of learning, and it can be considered as the societal level of learning (i.e., apart from individual, group, organizational, and inter-organizational levels that has been previously identified). Two key factors inhibiting organizational learning in the societal dimension also emerged from the literature review: the socioeconomic system, and the characteristics of the industry segment.

Socioeconomic system: There can be multiple ways the socioeconomic system affects organizational learning. I will describe two of the critical ways: managerial control imperatives and the impact of national culture.

For the former, it can be argued that the essence of the Western attitude towards management control has changed little since the time of Weber. Although the form and rhetoric has altered, the basic imperative of Western society to exercise control has not changed (Pearce, 2004; Seo, 2003). For example, new forms of work design (e.g., self managed teams) give impressions of autonomy and empowerment, but can simply mask more powerful methods of control (Barker, 1999). In self managed teams, supervision shifts from the manager, who is more distant, to colleagues. The pressure to conform to group values is much greater when control is exercised by an individual's peer group (Barker, 1999). The imperative for control is also driven by the critical stakeholders, such as the shareholders, of the organization. This influence has been reinforced by recent scandals in large multinational organizations, such as Enron and WorldCom. Therefore, the imperative for control has not changed since the turn of the 19th century in spite of a greater emphasis on autonomy. This has implications for learning, especially double-loop learning, which requires a certain degree of loss of control and ambiguity (Seo, 2003).

The second way socioeconomic systems affect organizational learning is through national culture. However, attempts to study the influence of national cultures on organizational learning are limited with few exceptions like Berrell, Gloet, and Wright (2002). Therefore, further empirical evidence is needed. The social, religious, and political values, constituting the national culture, can combine to

influence local management behavior. Such behavior impacts on management learning and decision making (Berrell et al., 2002). However, a pervasive company culture in a multinational organization, especially imposed by the head office on their subsidiary situated in a different country, can create tensions in the subsidiary organization especially when it is in variance with the national culture (e.g., Bloom, Milkovich, & Mitra, 2003; Kessapidou & Varsakelis, 2003; Miroshnik, 2002).

Characteristics of the industry segment: The second factor constituting the societal dimension is the characteristics of the industry segment. Levinthal and March (1993) suggests that organizations investing in Research and Development activities have a greater capacity for absorbing new knowledge generated by others in the industry. If this is a characteristic of a critical mass of organizations in the industry segment, it forms an upward spiral, enforcing knowledge creating activities. However it can give rise to a dysfunctional situation. If such organizational learning is in response to competition within the industry segment, the upward spiral makes the organization susceptible to competency traps. It leads organizations to adhere to established technologies and to overlook options beyond their industry segment. This is primarily due to pressure being imposed by stakeholders to mimic industry practices, in order to gain legitimacy in the industry segment (DiMaggio & Powell, 1991; Seo & Creed, 2002). This slows the rate of industry growth, potentially inviting new market entrants. Barnett and Sorenson (2002, p. 289) refer to this as the "red queen" phenomenon.

3.2.6 Summary of the synthesis

The five dimensions represent a systemic and holistic perspective of learning barriers in an organizational context. They have been constructed by synthesizing the scattered literature, and they influence the levels of learning in the organization, with an additional societal level which was also identified. The Intrapersonal dimension clearly affects the individual level of learning, the Relational dimension affects the group level of learning, and the Cultural and Structural dimensions affect the organizational and inter-organizational levels of learning. The Societal dimension concerns the societal level of learning, and is often a more latent learning barrier than the other dimensions. When management engages the societal norms, which often influence the dominant beliefs of the organization, this is considered as triple-loop learning (Nielsen, 1996; Seo, 2003).

However, one can criticize the dimensional view of learning barriers by arguing that the five dimensions are not necessarily independent constructs. Clearly, there are degrees of interconnection, whereby an intrapersonal dimension can escalate to the cultural and structural dimensions. For example, individuals develop competencies in their role in the organization. Over time, with success, such competencies become cognitively ingrained. If their identity as a competent individual is dependent on their organizational role, their self esteem becomes organizationally based (Pierce & Gardner, 2004). However, when such individuals are influential, especially if they are members of the dominant coalition, the situation is more complex. Systems, processes, policies and actions, which prevent the questioning and surfacing of beliefs and assumptions that underpin their cherished competencies, can become embedded in the organization.

Over time, the culture of the organization is conditioned and oriented to avoid questioning the beliefs so that the 'un-discussable' never troubles the accepted verities. Within a rapidly changing environment, such competencies, which brought success in the past, may no longer be effective but disappear from conversations about possible change although individuals may be unaware of this process (Argyris, 2004). Accordingly, despite the interconnection between the dimensions, they still offer a useful way of perceiving and working with the complexities of learning barriers. However, one question remains unclear and poorly answered in the extant literature; how do these dimensions affect the transfer of learning across the levels of learning? This brings us to the next objective of this chapter, that is, to investigate the impact of the learning barriers on the transfer of learning, by using the Delphi technique.

3.3 The Impact of Learning Barriers on the Levels of Learning in the Organization

Nonaka (1994) describes knowledge as existing in two levels. Explicit knowledge exists at the epistemological level, where explication is possible using written or coded formats; whilst tacit knowledge exists at the ontological level. The explication of tacit knowledge requires the use of metaphors and an extensive process of socialization (Nonaka & Takeuchi, 1995). On whatever level knowledge exists, the transfer of knowledge is, in large part, a transfer of information. The information can be in coded, written, metaphorical communication, or even an observed behavioral format. If such information can

highlight any discrepancy or failure of the current beliefs and assumptions of the organization, it is said to be unique by containing surprise value.

New learning, resulting in new knowledge creation, is facilitated by the explication and transfer of such unique information. The transfer requires a psychologically safe environment in the organization (Argyris, 1995; 1997). This learning barrier arises primarily from the cultural dimension. However, in the process of unique information transfer, the constraining actions of this learning barrier, as well as other learning barriers arising from the five dimensions, are little understood. There have been few case studies looking at learning barriers (e.g., Beech, McIntosh, McLean, Shepherd, & Stokes, 2002; Gudz, 2004; Steiner, 1998; Tan & Heracleous, 2001; Vassalou, 2001). Moreover, because such studies have not considered the learning levels in a holistic manner, a key question remains unanswered: "What is the impact of learning barriers on the transfer of unique information across the various levels of learning in the organization (i.e., individuals, groups, organization, and even inter-organization)?"

The primary path of such unique information transfer is from individuals to the group (and vice versa), from the group to the organization (and vice versa), and from organization to inter-organization (and vice versa). Figure 3.0 below, which I have adapted from Crossan and Hulland's (1995) learning matrix, depicts the various paths of information transfer, with cells (1,2), (2,1), (2,3), (3,2), (3,4), and (4,3) being the primary paths of transfer. There are, however, other paths of transfer (e.g., from the individual to the organization). I did not consider these paths in this investigation as they do not represent the usual paths for double-loop learning transfer in an organization. For instance, much double-loop learning, and

its subsequent implementations, occurs through groups. It is not usual for this type of learning to be implemented by an individual, as any double-loop learning impacts the wider organization.

Transfer To

Transfer From	Individual	Group	Organization	Inter-Organization
Individual	(1, 1)	(1, 2)	(1, 3)	(1, 4)
Group	(2, 1)	(2, 2)	(2, 3)	(2, 4)
Organization	(3, 1)	(3, 2)	(3, 3)	(3, 4)
Inter-Organization	(4, 1)	(4, 2)	(4, 3)	(4, 4)

Figure 3.0 – Paths of Information Transfer in an Organization (Source: *Sun & Scott, 2005a*)

Barriers to unique information transfer can potentially arise from each level of learning in the primary path. The barriers can arise from the individual to group (cell (1, 2)), from group to the individual (cell (2, 1)), from group to the wider organization (cell (2, 3)), from organization to the group (cell (3, 2)), and from organization to inter-organization (cell (3, 4)). The next sections will describe the Delphi method employed to investigate these barriers to unique information transfer (I will only focus on the primary path). They will be followed with a discussion of the results from the Delphi study, and the chapter concludes with further work arising out of the investigation.

3.3.1 Description of the Delphi method

The Delphi process is a suitable empirical tool to obtain a reliable consensus of opinion from a group of experts (Buckley, 1995), and its non-threatening process makes the technique particularly suitable here. I chose the participants, each having more than four years of experience, and performing different functions in their organization, from seven different organizations. I included a mix of junior to senior managers, and Table 3.0 below gives a description of each participant and their job role. I conducted the Delphi process in two stages.

Table 3.0 – A Summary of the Survey Participants

Participant	Role	Organization
Participant 1	Managing Director	A large apparel manufacturing organization with 1000 employees.
Participant 2	Planning Manager	A large apparel manufacturing organization with 1000 employees.
Participant 3	SAP consultant in Finance and control	A consultancy organization with 23 employees.
Participant 4	SAP consulting Manager	A consultancy organization with 23 employees.
Participant 5	SAP consulting Manager	A consultancy organization with 23 employees.
Participant 6	Deputy General Manager for Production	A large apparel manufacturing organization with 1400 employees.
Participant 7	Sales Director	An IT solutions provider for the apparel industry, specializing in factory floor automation – 30 employees.
Participant 8	Assistant Finance Manager	A large apparel manufacturing organization with 1400 employees.
Participant 9	Finance Director	A large textile mill with over 300 employees
Participant 10	Assistant Manager in Production Planning	A large apparel manufacturing organization with 1400 employees.
Participant 11	Finance Executive	Employed in the central service unit of a holding company, having around 30 employees.
Participant 12	Managing Director	A small accessory manufacturing company, focused in the apparel sector – 50 employees
Participant 13	Managing Director	A medium sized apparel manufacturing organization with 500 employees
Participant 14	Production Manager	A large apparel manufacturing organization with 1000 employees.
Participant 15	SAP consultant in Production Planning	A consultancy organization with 23 employees.
Participant 16	Maintenance Engineer	A large apparel manufacturing organization with 1400 employees.
Participant 17	Sales Executive	A consultancy organization with 23 employees.

Source: *Sun and Scott (2005a)*

Stage 1 of the Delphi process

In stage 1, I attempted to elicit the barriers to unique information transfer between the levels of learning in the primary path (i.e., cells (1, 2), (2, 1), (2, 3), (3, 2), and (3, 4)). As the barriers from organization to inter-organization (i.e., cell (3, 4)) are likely to be similar, I did not consider the transfer from inter-organization to organization (i.e., cell (4, 3)).

Twenty-five individuals were requested to participate in the first stage and seventeen completed the Delphi process, giving a completion rate of 68%. The participants were involved in the Delphi process from their own work environment, in their own time, and without my presence. I did not bring the participants together into a captive environment to conduct the study. On average, the participants took approximately a week to respond, and another week was taken to collate and analyze the data. Therefore, the time gap between each round of the Delphi process was approximately 2 weeks.

In the first round of the process, I asked the participants to list the barriers to the transfer of unique information between the learning levels (in the primary path). I requested the participants to reflect on the barriers, based on their experience in double-loop learning. A total of ninety barriers, see Appendix 1, were compiled. In the second round, I gave these ninety barriers to the participants to be ranked. The ranking was based on their perceived impact of the barriers during the transfer of unique information. If over 70% of participants ranked a barrier in the top ten, I assumed that a convergence was reached. I shared this statistic with the participants and requested them to re-rank. I terminated the Delphi process at the

conclusion of the third round because the dispersion of rankings showed no further decrease (dispersion was measured by two statistical measures: Covariance and Range).   Appendix 2 shows the third round results of the stage 1 Delphi process.

I then gave the ranked barriers derived in Stage 1 to five managers selected from three organizations (in order to ensure that a representative view was obtained).   I first asked them to independently list the possible sources of these barriers.   I then gathered the five individuals into a brainstorming session.   The participants agreed on fourteen sources of barriers, categorized into the relevant learning levels (see Appendix 3A – 3E for the outcomes of the brainstorming session).   These fourteen sources can be described briefly as follows (I have retained the terminologies that the participant used):

'Individual imperatives': These arise from the individual's need for control and a sense of certainty.   Individuals thus develop habits and inertia in order to create a comfort zone in which to operate (Szamosi & Duxbury, 2001).   The process occurs due to the need of the individuals' for self identity (or self-concept) in an organizational context (Pierce & Gardner, 2004; Dutton, Dukerich, & Harquail, 1994).   A comfort zone provides the necessary space for the individuals to express themselves, creates a sense of distinctiveness, and enhances their view of themselves as contributing members of the organization (Dutton et al., 1994).   Therefore, any learning that destabilizes their comfort zone and impinges on their self identity is resisted, drawing strong ego defensive reactions.   This is clearly an intrapersonal dimensional barrier.

'Organizational imperatives': These are 'individual imperatives' operating at the management level. This means 'individual imperatives' of the dominant coalition members. Since such barriers are usually of a political nature in the organization (Seo, 2003), impacting the entire organization, the participants chose to label it differently.

'Inter-organizational imperatives': These are 'Organizational imperatives' operating in the management hierarchy of the partner organization, with whom a strategic alliance exists.

'Organizational climate': This is usually visible and felt, and is considered as an artifact of organizational culture (Schein, 2000). A major source of such a barrier would be the absence of a psychologically safe organizational climate, in which to express and experiment with different opinions. This is clearly a cultural dimension barrier.

'Group climate': This operates at the group level. The group climate determines how individuals interact in the group, and is usually determined by the group leader's communicative style, which could be autocratic, democratic, or laissez-faire (Lewin, Lippitt, & White, 1939). Group climate, more often than not, reflects the cultural orientation of the organization. The extent of cooperation or rivalry between groups in the organization, and the leadership style in the organization, determines the leadership style in the group. This influences the group climate, and can be argued to be a cultural dimension barrier.

'Inter-organizational climate': This is the climate between organizations and is not static, but transient, since it depends on the reciprocal behavior of the inter-organization partners (Larsson et al., 1998). This can be argued to be influenced by the culture of the respective organizations, placing it as a cultural dimension barrier.

'Organizational relationships': These relationships are built on a foundation of trust and can encompass both the formal and the informal. Informal relationships can play a vital role, especially in breaking down political and hierarchical barriers in an organization (Cross & Prusak, 2002). This is clearly a relational dimension barrier.

'Group relationships': The relational composition of the group affects the quality of group decision making (Propp, 1999). As group members become familiar with one another, and develop a trusting relationship, the type of information they are comfortable in sharing would be influenced (Propp, 1999). This is again a relational dimension barrier.

'Inter-organizational relationships': The type of interaction behavior could shape the way individuals from alliance partners perceive one another. For example, if an organization adopts competitive behavior, there is a likelihood that inter-organizational mistrust will develop, thus creating barriers in unique information transfer. This is a relational dimension barrier.

'Competencies': Competencies play an important role in the explication of unique information. Lack of capability, lack of confidence to learn, and improper

analysis are some important factors that hinder the transfer of unique information (Pardo del Val & Fuentes, 2003; Pearn et al., 1995). This lack of competency generates individual defensive reactions, in order to prevent embarrassment and threat (Argyris, 2004). This can be considered as an intrapersonal dimension barrier.

'Organizational systems and structures': Organizational systems and structures can generate barriers by affecting time, flexibility, and complexity. Limited time could produce a less optimal solution (Propp, 1999). It would also deter involvement, particularly when the potential learning increases the current workload (Senge et al., 1999). This is clearly a structural dimension barrier.

'Group structuring': This deals with the composition of the group, the size of the group, and the temporal constraints, such as time for involvement, which are all potential barriers to effective group work. This is a group communication structure issue placing it as a structural dimension barrier.

'Inter-organizational systems and structures': These are the formal systems and structures set up between the organizations to share information. Ineffective interface facing systems and structures impedes information transfer (Malhotra, Gosain, & ElSawy, 2005), and can be considered as a structural dimension barrier.

'Group norms': Adherence to group norms is a powerful factor, potent enough to lead an individual to express a judgment different from his or her personal beliefs. The group norms stem from the need to be collectively identified as a unit (Asch, 1951). Strong group norms, especially in more established formal (or even

informal) groups, can reflect the underlying beliefs and assumptions of the organization. I therefore argue this to be a cultural dimension barrier.

The organizational culture, which consists of the underlying beliefs and assumptions of the organization, was not stated as a source of barriers by the participants. The participants agreed that culture is intrinsic, whilst the organizational climate is more extrinsic and therefore directly impacts the motivation and behavior of the individual (Hofstede, 1998). This is in keeping with literature that defines organization climate as the artifacts of culture, and hence quantifiable and measurable (Schein, 2000). The organizational climate acts in ways to constrain deviant action, thereby preserving the organizational culture (Sewell, 1992). Therefore, the organizational climate as a source of barrier arises from the cultural dimension.

These fourteen sources of barriers, identified through the brainstorming session, thus arise from the five dimensions identified in section 3.2. I have linked the fourteen sources of barriers to the five dimensions and show it in Table 3.1 below.

Table 3.1 – Relationship of the Fourteen Sources of Barriers to the Five Dimensions

Dimension	Identified Sources of Barriers
Intrapersonal	Individual imperatives, organizational imperatives, inter-organizational imperatives, competencies
Cultural	Organizational climate, inter-organizational climate, group climate, group norm
Relational	Organizational relationships, group relationships, inter-organizational relationships
Structural	Organizational systems and structures, group structuring, inter-organizational system and structures
Societal	-

Stage 2 of the Delphi process

I repeated another Delphi process in Stage 2, in order to determine the degree of impact of the sources of barriers on each of the critical learning barriers identified in Stage 1. I asked the participants to rate this impact from 1-5, with 1 being the lowest influence and 5 being the highest influence. I then shared the mean rating and the standard deviation of the preceding round, with the participants in the next rounds. I provided additional statistics (namely the percentage of participants who rated below 3 (low impact), between 3 and 3.75 (moderate impact), and greater than 3.75 (high impact)) for the third round. I terminated the Delphi process at the completion of the third round when a satisfactory convergence, as measured by Covariance and Range, was achieved. Appendix 4A-4E shows the final results of the third round of the stage 2 Delphi process. Table 3.2 summarizes the sources of barriers that have a significant impact on the relevant levels of learning.

Table 3.2 – Summary of the Impact of the Sources on the Relevant Learning Levels

Sources of Barriers	Individual to the group	Group to Individual	Group to Organization	Organization to the group	Organization to Inter-organization
Individual imperatives	√		√		
Competencies	√	√		√	
Group climate	√	√	√		
Group relationships	√	√			
Group structuring					
Group norm	√	√			
Organizational climate	√	√	√	√	√
Organizational relationships				√	
Organizational systems and structures		√	√	√	
Organizational imperatives				√	√
Inter-organizational climate					√
Inter-organizational relationships					√
Inter-organizational systems and structures					√
Inter-organizational imperatives					√

Source: *Sun and Scott (2005a)*

√ - represents high impact (greater than 3.75) as determined by the stage 2 Delphi process

3.3.2 Discussion on the results of the Delphi study

I have summarized the impact of all sources of barriers on the learning levels in Table 3.2 above (only the significant impact is considered). This summary is graphically illustrated in Figure 3.1 below. Drawing from this study, I will now discuss the key sources of barriers.

Transfer To

	Individual	Group	Organization	Inter-organization	
Individual	(1, 1)	GR OC GC (1, 2) II GI CO	(1, 3)	(1, 4)	CO – Competency II – Individual imperative GC – Group Climate GR – Group Relationships
Group	GR OC GC (2, 1) SS GI CO	(2, 2)	SS GC OC (2, 3) II	(2, 4)	GI – Group norms OC – Organizational climate OR – Organizational Relationships

Organization	(3, 1)	OC CO
		SS (3, 2) OR
		OI
			(3, 3)	OC IOC
				OI (3, 4) IOR
				IOI IOS
					SS – Org. systems and
					      Structures
					OI – Organizational
					      Imperatives

Inter-organization	(4, 1)	(4, 2)	(4, 3)	(4, 4)	IOC – Inter-org climate IOR – Inter-org relationships IOS – Inter-org systems & Structures IOI – Inter-org imperatives

Transfer From (label on left side of rows, between Group and Organization)

Figure 3.1 – The Impact of the Sources of Barriers on the Relevant Levels of

Learning (Source: *Sun & Scott, 2005a*)

Key barriers operating in individuals: Individual imperatives appear to be a significant source of barriers, affecting all levels of learning in the organization. Individuals who are embedded in scripted behavior want to continue in their comfort zone. These individuals usually have their interests and self identity rooted in the organization they operate in (DiMaggio & Powell, 1991; Fligstein, 1997). This means that their economic well-being, psychological comfort zone, and social status, are all tied to the current context of the organization (Seo, 2003). The resulting fear of loss of ownership and control of knowledge can hinder unique information transfer.

At the group level, the transfer of unique information to the wider organization is hindered when individuals in the group find their personal comfort zone being potentially de-stabilized. They compare the benefits to their group, vis-à-vis the organizational benefits, and this is the usual source of the barrier.

At the organizational level, the downward transfer of unique information to a group is hindered by the 'individual imperative' of management. Management fears the loss of control and status when such unique information is transferred. These are referred to as 'organizational imperatives', because such actions by management usually have wider organizational consequences.

One important outcome is the presence of 'organizational imperatives' as a significant source of barriers in inter-organizational learning transfer. The transfer of unique information across organizations is hampered if it brings into question the existing practices of one of the organization. Such questioning can lead to the destabilizing of management's comfort zone, and hence lead to significant learning barriers. This provides a useful insight into the much researched and agreed upon need for culture agreement between organizations (e.g., Beeby & Booth, 2000), and on the reciprocal behavior of inter-organizational management (e.g., Larsson et al., 1998).

Further research on how to overcome individual imperatives is critical to the development of the learning organization. As seen in the above discussion, these individual imperatives affect all levels of learning in the organization.

Barriers operating in groups: The area of group relationships has been extensively researched (e.g., Druskat & Wolff, 2001; Propp, 1999; Poole, 1999). As group members become familiar with one another and develop trust, these relationships will determine what types of information they are comfortable in sharing. Conflicting and divergent ideas would be positively handled, enriching the solution finding process. However, if socio-emotional needs arising from such conflicts and divergence are not addressed, then there will likely be barriers that will inhibit the double-loop learning ability of the group.

Delphi participants also noted group climate as significant in the transfer of unique information from the group to the wider organization. This has to do with the group's perception of how justifiable the reward will be for sharing such unique information, and how they will compare with other groups in the organization (especially in the way other groups are rewarded for sharing unique information).

The group norm is a factor powerful enough to lead an individual to express a judgment different from what they believe in. Group norms stem from the need to be collectively identified as a unit. Such identification is strengthened by shared fantasies, which spread out amongst group members, and create a convergence of values and motives. Any deviation in thought would generate a sense of loss and uncertainty for the group, and elicit collective emotional reactions against such deviations.

Although group structuring has been extensively studied, and identified as a critical factor affecting group communication (e.g., Propp, 1999; Salazar, 1995) it did not arise as a significant barrier in my investigation.

However, competency did emerge as a significant source of barrier at the group level. The perceived competency of an individual by the group, determines the extent of unique information transfer by the group to the individual. Similarly, at the organizational level, the perceived competency of the group, by the organization, determines the extent of unique information flow from the organization to the group.

This Delphi investigation represents one of very few holistic investigations undertaken to identify barriers to learning transfer and its effect on the levels of learning. This holistic investigation enabled me to identify sources of barriers, external to the group, and affecting group interaction. I noted two significant external sources of barriers affecting the group interactions: the influence of the organizational climate on group interaction, and the influence of the systems and structures of the organization. The organizational climate influences the power struggle that can potentially arise in a group interaction, especially in its early forming stage. This involves the level of comfort group members have, in bestowing power to other members through the sharing of unique information. The systems and structures of the organization were another significant source of barriers. The accuracy, timeliness, and the degree of difficulty in acquiring necessary information from the organization, can affect group interaction.

Barriers operating at the organizational level: A surprising outcome of this investigation is the impact of organizational relationships. These relationships appeared to be a significant source of barriers, only in the transfer of unique information from the organization to the group. This implies that the extent of unique information transfer from the wider organization to the group depends on the strength of the relationships the group members have with the wider organization. Therefore, I posit that the inward flow of unique information to the group increases with increasing strength of organizational relationships.

Barriers at the inter-organizational level: The primary motive for strategic alliance is to learn and to improve operations (Dodgson, 1993; Huber, 1991), whilst the greatest fear is the risk of uncontrolled information disclosure resulting in the diffusion of core competencies (Beeby & Booth, 2000; Jarillo & Stevenson, 1991). The above 'motive' and 'pitfall' of strategic alliances, along with the reciprocal behaviors of individuals in the organizations (Larsson et al., 1998) create potential barriers in information transfer.

Larsson et al. (1998) contend that an organization involved in a strategic alliance will make two choices: to be more or less 'transparent' and more or less 'receptive.' 'Transparency' is the extent of the disclosure of unique information to the alliance partner, whilst 'receptivity' is the level of absorption of unique information from the partner. The degree of interaction between transparency and receptivity will determine the interactive behavior of the partner organizations. An organization can display five types of interactive behavior (Larsson et al., 1998):

1. Avoidance (low 'transparency', low 'receptivity')

2. Accommodation (high 'transparency', low 'receptivity')

3. Competition (low 'transparency', high 'receptivity')

4. Collaboration (high 'transparency', high 'receptivity')

5. Compromise (moderate 'transparency', moderate 'receptivity')

Larsson et al. (1998) contend that a type of interactive behavior by Organization A will elicit certain types of responses from Organization B. These interactions generate the inter-organizational climate, and determine the inter-organizational relationships, and the type of inter-organizational systems and structures that are instituted to share information. Unless the interaction is highly collaborative, significant barriers will be generated.

3.3.3 Further investigation needed

The result of this investigation provides useful insights into the impact of the sources of barriers across the levels of learning in the organization. The sources of barriers, operating at all levels of learning in the organization, provide valuable information to practitioners who wish to optimize the effectiveness of learning transfer in organizations.

In this investigation, I have left out paths of transfer that are not considered primary (i.e., cells (1,3), (1,4), (2,4), (3,1), (4,1), and (4,2)). I propose these as possible future areas of investigation. One possibility would be to investigate the effects of non primary paths on the primary path of learning transfer.

This research highlights the significant impact of individual (and management) imperatives on all the levels of learning. How does an individual overcome these 'individual imperatives,' re-define their mental model, and engage the barriers at the levels of learning, in order for double-loop learning to take place and then instituted in the wider organization? This is a question clearly arising from this investigation. As far as I could determine, it is not sufficiently addressed, let alone answered, in the extant literature. I therefore proposed two additional research questions, which will be answered in Chapters 5 and 6.

The first is research question Q3, *"How do individuals initiate a double-loop change?"* Such initiation not only requires the individual to reframe their mental model by altering their underlying beliefs and assumptions, but also to engage the learning barriers at the interfaces of the levels of learning. I will deal with this research question in Chapter 5.

The second is research question Q4, *"How does a new shared understanding for a double-loop change develop across the wider organization?"* The individuals in the organization, especially the powerful stakeholders, must embrace a new shared understanding resulting from a new belief system. I will deal with this research question in Chapter 6. However, prior to dealing with the research questions Q3 and Q4, it is essential that I defend the meta-level multiple methodology approach that is used, and the theoretical perspectives guiding my analysis of Q3 and Q4. This defense is in Chapter 4.

CHAPTER 4

A CASE FOR THE META-LEVEL MULTIPLE

RESEARCH METHODOLOGY APPROACH

"Why did I use multiple methodologies?"

4.1 Introduction

As discussed in Chapter 2, most learning organization models have been developed by practitioners, based on their varying consultancy experiences, and therefore lack academic rigor (Tsang, 1997). I was mindful of this critical issue, and therefore decided to approach this PhD research differently. I first wanted to come to terms with the socio-psychological processes of double-loop learning in the organization, and then, with a greater insight into this phenomenon, approach the development of a measurement instrument for the learning organization. This is why, at the meta-level, multiple methodologies were used to find answers to the research questions Q1-Q5 that evolved as I took this journey to completing my doctoral research.

In the sections that follow, I will describe the need to engage the study of the learning organization through multiple paradigms, and therefore the need for using multiple

methodologies at the meta-level, with a focus on research questions Q3 and Q4. I then present the ethical considerations, and finally my background, which impinges on paradigm preferences.

4.2 Multiple Paradigm View of the Learning Organization

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A significant contribution towards an explanation of the term "paradigm," in the context of academic research, came from Kuhn (1962, 1970). In spite of its long history, there is little agreement on the definition of the term "paradigm," even amongst academic community with similar research perspectives (Saratanko, 1998). To clarify these uncertainties I follow Morgan's (1979) suggestion, which best encapsulates the explanations of paradigm used by most researchers.

Morgan (1979) suggests that the term "paradigm" can be used at the philosophical, the social, and the technical levels. At the philosophical level, a paradigm reflects the basic beliefs of the researcher about the social world. The worldview of the researcher often dictates the way the research is conducted, and the techniques that are often used in conducting the research. Morgan (1979) describes the former as the social level explanation of paradigm, and the latter as the technical level explanation of paradigm. I will begin by first describing some of the key contributions made by researchers in explaining paradigms, before embarking on the need to engage the learning organization using multiple paradigm lenses.

4.2.1 Key contributions in the explanation of paradigms

While it is not the intent of this section to deeply delve into the paradigm literature, the relevant key contributions will be discussed. The most widely known view on research paradigms is the contribution of Burrell and Morgan (1979), and would be an appropriate point to begin the discussion.

Burrell and Morgan (1979) present a 2x2 matrix framework that views the nature of the social world in two dimensions: subjective-objective, and regulation-radical change. The primary assumption of the authors is that society either undergoes radical change (sociology of radical change) characterized by structural conflicts and domination, or society is regulated (sociology of regulation) characterized by cohesiveness and solidarity. These assumptions can be viewed as two extremes of the regulation-radical change dimension. However, Burrell and Morgan insist that there is no continuum between these extremes (i.e., there is no middle-ground). Within these two extremes, Burrell and Morgan observe another dimension existing, that of subjective-objective. In the subjective dimension, the experience of the individual and their beliefs and assumptions guides their interpretation of the social world. Whereas, in the objective dimension, the individual is primarily guided by what he or she observes from the social world.

This 2x2 framework is illustrated in Figure 4.0 below, and presents four quadrants representing four paradigms: radical humanist, interpretive, functionalist, and radical structuralist.

Sociology of Radical Change
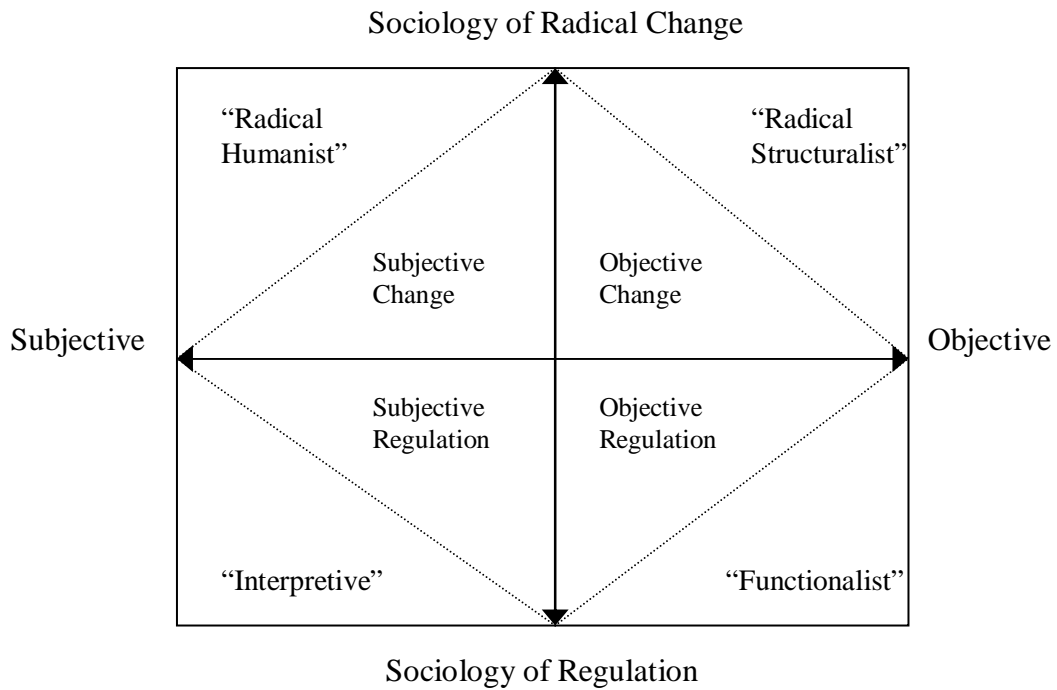
Figure 4.0 – Burrell and Morgan's Framework of 'Four Paradigms'

Radical humanist: In this paradigm, the subjective experience of the individual is involved in the creation of the social world. The internal world of the individual (i.e., the beliefs and assumptions making up the cognitive framework of the individual), often interacts with the external institutionalized world (Rousseau, 1998). This external institutionalized world consists of the dominant systems and practices often created by the ideological superstructures of society. Often, the influence of the ideological superstructure is strong enough to hinder the individual explicating his or her true internal world, especially if they are radically different. The question of how individuals engage the ideological superstructure, in a social world that is radically changing, belongs to the radical humanist paradigm.

Interpretive: Similar to the radical humanist paradigm, the interpretivist views the social world based on his or her subjective experience. Rather than being an observer, the interpretivist seeks to understand the social world, which in this case is more regulated, from the perspective of a participant.

Functionalist: This is the dominant paradigm in Burrell and Morgan's framework. It is strongly orientated towards the sociology of regulation, where the researcher takes an objective point of view, and the social world is considered to be observable. This paradigm is problem orientated and seeks to provide explanation (and hence practical solutions) for the prevailing status quo, social order, need satisfaction, and actuality (Burrell & Morgan, 1979).

Radical structuralist: In this paradigm, although it is undergoing radical change, the social world is considered observable. This paradigm seeks to understand, from an objective point of view, the interrelationships that exist within the structure of the social world during a radical change.

Although the Burrell and Morgan framework is now outdated, it is still widely used in social science research. However, in spite of its popularity, it has a large community of detractors. One primary drawback of the Burrell and Morgan framework is the incommensurability of paradigms. This has led to many researchers finding it difficult to represent themselves in one of the four quadrants of the framework (Deetz, 1996), therefore criticizing the incommensurability of paradigms

(Alvesson & Deetz, 2000). These issues have led others to view paradigms as a continuum with two large divide – quantitative and qualitative (Creswell, 1994).

Creswell's (1994) quantitative-qualitative paradigm framework is significant. Creswell (1994) suggests that research might either orient towards a quantitative or qualitative paradigm, and five assumptions are proposed to differentiate between them: ontological, epistemological, axiological, rhetorical, and methodological.

Ontological: The primary question guiding the researcher is "what is the nature of reality?" If the researcher considers the social world as objective and external to him or her, then the orientation is clearly towards the quantitative paradigm. However, if reality is subjective (i.e., product of individual's consciousness), and can only be seen by examining the perception of the human actors concerned (Collis & Hussey, 2003), then the orientation is clearly towards the qualitative paradigm. The ontological assumptions are the primary assumptions on which the other four assumptions rest.

Epistemological: Depending on the ontological assumptions, the researcher would hold different views of what creates valid knowledge and how it should be studied. A quantitative researcher considers valid knowledge as that which can be observed and measured, and usually takes an objective and independent stance. A qualitative researcher will attempt to minimize the distance with which research has been conducted, and try to experience, as far as possible, the phenomenon under consideration.

Axiological: This concerns the role of the researcher's values. The quantitative researcher remains detached from what is being researched, and will, as far as is possible, be unbiased in their analysis. They believe that the objects they are studying were present before the research began and will continue to remain thereafter (Collis & Hussey, 2003). However, due to the closeness of the qualitative researcher to what is been researched, the researcher's values and bias fundamentally influences the outcome of the study. This is why quantitative studies are said to have high reliability but low validity, whilst qualitative studies are said to have low reliability but high validity (Collis & Hussey, 2003).

Rhetorical: This concerns the language of the research, especially when it comes to disseminating research findings. In quantitative studies, the writing is usually formal, impersonal, and written in a passive voice. However, in qualitative studies, the position is less clear. Usually, it is written in an active voice and in the first person, in order to reflect the immediacy of the researcher.

Methodological: Based on the above four assumptions, a methodology that can be used to conceptualize and engage with the research process emerges. As defined earlier, methodology refers to the overall approach taken to the research process.

Morgan and Smircich (1980) contributed to the paradigm debate by suggesting that it is a continuum with six stages. One end of the continuum aligns with the quantitative paradigm, with objectivist being the extreme stage. In this extreme stage, the social world is an external concrete structure, and therefore can be analyzed and measured

objectively. The other end of the continuum aligns with the qualitative paradigm, where subjectivist is the extreme stage, and where reality is seen as a projection of the human imagination. Few people operate within their pure extreme form, and there would be some element of diffusion (Collis & Hussey, 2003).

There have been others who have contributed significantly to the paradigm debate, with Lincoln and Guba (1985) presenting an interesting historical account of the paradigm movement. Lincoln and Guba describe three paradigm eras: prepositivist, positivist, and postpositivist. Of the three, the prepositivist era survived the longest period with a two thousand year history. Many researchers in the prepositivist era took the stance of a passive observer and their interpretation was influenced by what they observed (Lincoln & Guba, 1985). The prepositivist era was succeeded by the positivist and the more recent postpositivist era. However, when closely analyzed, the paradigms of the positivist era and the postpositivist era closely align with the quantitative and qualitative paradigms respectively. Lincoln and Guba argue that it was the many failings of the positivist era that led to the rise of the postpositivist era. They described this era by another term, "naturalistic paradigm" (p. 29), which is now used interchangeably with the term qualitative. Another interesting observation is that the positivistic era has been mainly dominated by North American researchers with their community of academic journals, whilst the charge towards a naturalistic paradigm has been led by the European researchers (Corner, 2005).

With this paradigmatic discussion, most academics argue that it is essential for the researcher to accept a particular paradigm orientation in a research activity. I find

this difficult to accept as it seeks to deplete, rather than enhance, the multi-dimensional nature of the learning organization. I now present the multiple paradigm view of the learning organization.

4.2.2 Engaging learning organization with multiple paradigms

I have chosen the 4I framework of Crossan et al. (1999) as the basis of this examination (see Figure 4.1 below). As far as could be determined, the 4I framework is the only organizational learning framework (in the extant literature), which explicitly considers the three levels of learning, and links the learning transfer between these levels using social-psychological processes of (I) intuition, (I) interpretation, (I) integration, and (I) institutionalization.
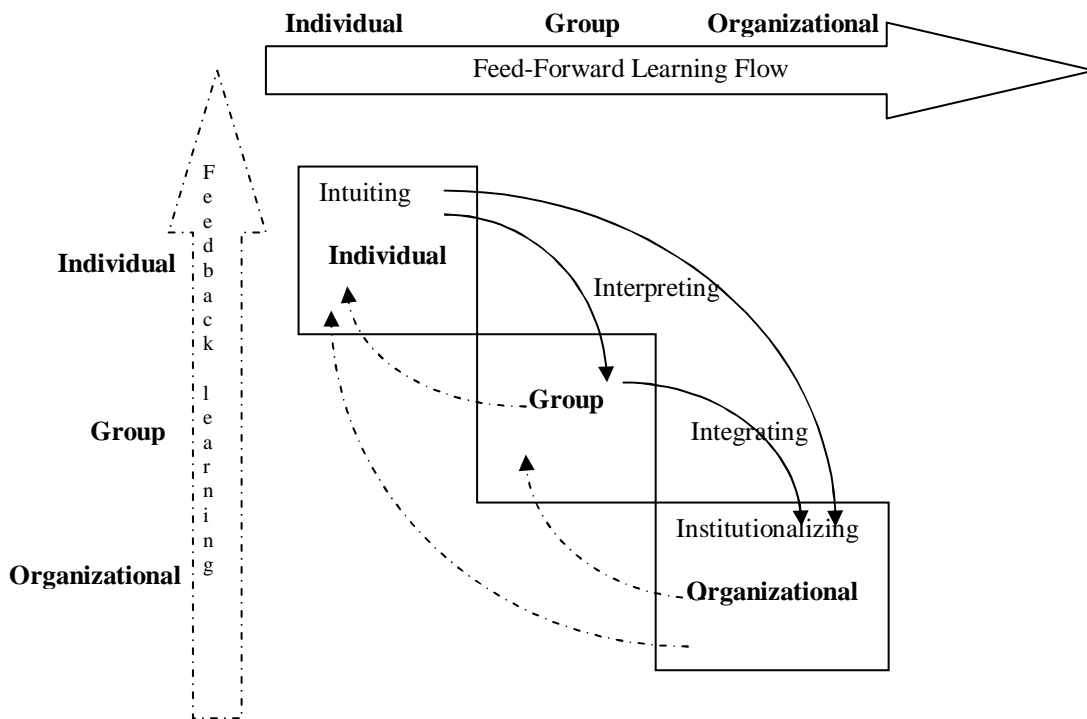
Figure 4.1 – The 4I Framework (Source: *Crossan et al., 1999*).

Therefore, at the ontological level, the 4I model examines the underlying nature of organizational learning, which will result at the epistemological level, in certain archetypes of learning organization. It is therefore an appropriate model to analyze the underlying paradigms that are needed to engage the study of the learning organization. Although a brief explanation of the 4I's was provided in Table 2.0, it would be useful for me to further elaborate on these 4I's and describe its link.

Intuition: This is uniquely an individual process happening in the subconscious, and involves some sort of pattern recognition. This process is the start of learning (Vera & Crossan, 2004), with Behling and Eckel (1991) suggesting two types of intuition. An expert intuition involves past pattern recognition, developed through many years of experience (Prietula & Simon, 1989), whilst entrepreneurial intuition is the ability to make novel connections and discern new possibilities by breaking out of the constraining effect of the individual's cognitive framework or mental model. It is the entrepreneurial intuition that is more likely to initiate double-loop learning (Crossan et al, 1999).

Interpretation: This process focuses on the conscious element of learning, and is the process of ascribing language or explication to what has been intuited. Individuals use metaphors to evolve, and make explicit, their entrepreneurial intuition, in order to achieve a shared interpretation with the group (Crossan et al., 1999; Nonaka & Takeuchi, 1995). This occurs through a process of dialogue, where the cognitive map or the mental model of the individual is both influenced by, and influences, the domain or the environment where the process takes place (Crossan et

al., 1999; Isaacs, 1993). Interpretation is therefore a process that moves beyond the individual and becomes more embedded in group work (Crossan et al., 1999). This is reflected in Figure 4.1 above, where "interpreting" straddles the individual and the group levels.

Integration: Whilst interpreting is the process of making the preverbal intuition more verbal, the process of integration focuses on developing a new shared understanding, resulting in a collective and coherent action by the group. The process of integration is crucial, as it is the bridge that translates the shared understanding from the group level to the organizational level (Crossan et al., 1999; Vera & Crossan, 2004).

Institutionalization: When a new shared understanding develops across the organizational level, and the underlying beliefs and assumptions of the organization change, new behaviors must be institutionalized or embedded into systems, structures, routines, and practices of the organization (Crossan et al., 1999; Levitt & March, 1988). This institutionalization process takes place uniquely at the organizational level.

Therefore, as illustrated in Figure 4.1, new learning occurs in the feed forward flow, which results in a new shared understanding developing across the organization, and new systems and processes become institutionalized, whilst existing institutionalized systems and processes are exploited in the feedback learning flow. Crossan et al. (1999) describes the former as "exploration" and the latter as "exploitation" (p. 523).

The 4I framework is more appropriate for double-loop learning (Crossan et al., 1999), and explicitly highlights the need for multiple paradigm engagement of the learning organization. Intuition, especially entrepreneurial intuition, is more at the subconscious level of the individual and deals with double-loop learning. The individual engages his or her mental model and the ideological superstructure of the organization, to bring about double-loop learning. It therefore deals primarily with radical change. Further, the ontological assumption is that of subjectivism and has to be engaged using the experience, beliefs, and assumptions of the individual. Therefore, as per Burrell and Morgan's framework, the process of intuition is best engaged using the radical humanist paradigm.

Interpretation is the process of explicating what is intuited by engaging, at the more conscious level, one's own mental model. The individual's interpretation is usually guided by their cognitive framework. Therefore, the process of interpretation is subjective, and best engaged using the interpretive paradigm.

Integration is the process of developing a new shared understanding from the group level to the level of the organization. This development of a new shared understanding therefore changes the social world of the organization. Such a change results in an observable behavioral change and is therefore objective. The process of integration is best engaged using the radical structuralist paradigm.

Institutionalization is the process of embedding new learning into the systems, structures, routines, and practices of the organization. This enables the organization

to exploit the new learning before the next wave of double-loop learning takes place. In this process, the social world is more regulated as the new shared understanding is deemed to have taken place. Therefore, the process of institutionalization is best studied using the functionalist paradigm.

Therefore, each of the 4 "Is" is best engaged through the four distinct paradigm quadrants of Burrell and Morgan's framework, and is illustrated in Figure 4.2 below. This shows that learning organization research cannot be conducted using the lens of either a single or narrow set of paradigms.
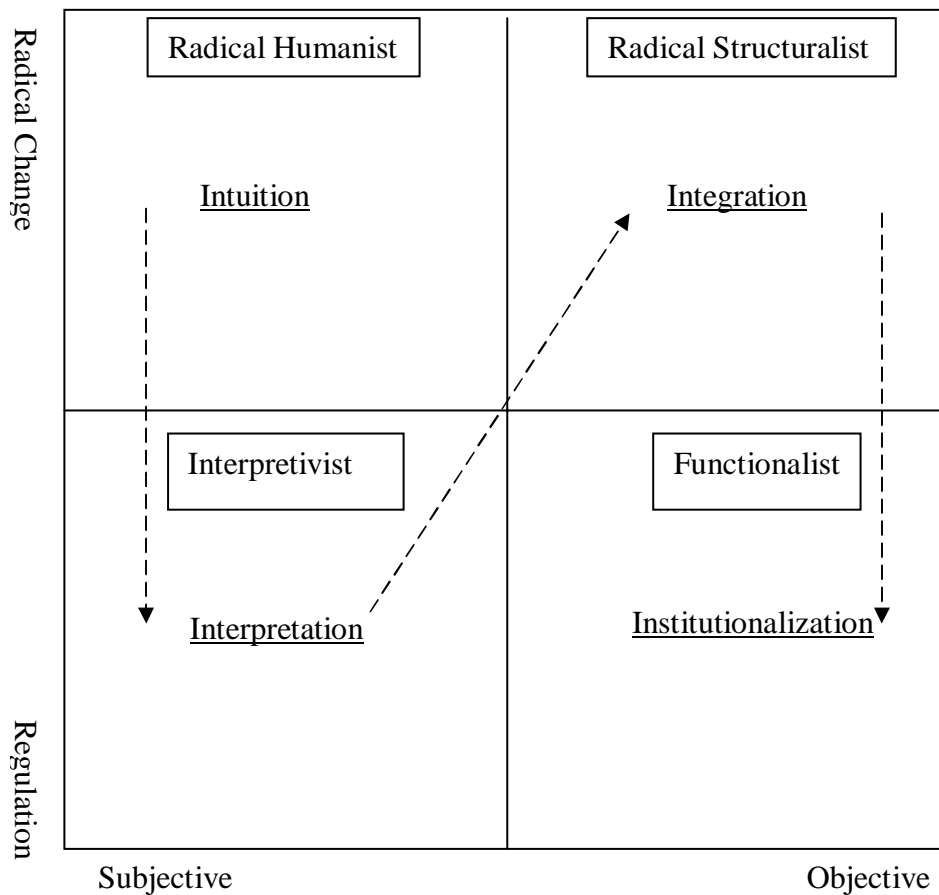
Figure 4.2 – The 4I Framework Engaged Using Burrell and Morgan Framework

4.3 The Need for Meta-Level Multiple Methodologies

The discussion in the previous section demonstrates a case for conducting learning organization research using multiple research paradigms. Therefore, in my research journey, I constructed several research questions (Q1-Q5), and each research question was investigated using a dominant methodology (according to Mingers and Brocklesby, 1997, a methodology is usually sympathetic to a particular paradigm orientation). These research questions encompassed quantitative and qualitative paradigms. However, all these research questions (Q1-Q5) stem from the single research objective of finding **"a method for assessing and developing features of a learning organization."** This is why, at the meta-level, I describe my research as multiple methodology research.

Lewis and Grimes (1999) conducted a review of multiparadigm approaches in the extant literature, and classified them into three different modes: multiparadigm inquiry, multiparadigm theory building, and multiparadigm research. In multiparadigm inquiry, extant literature can be reviewed using different paradigm lenses. For example, Mintzberg, Ahlstrand, and Lampel (1998) employed multiparadigm inquiry as a pedagogical device in reviewing the strategy field.

In multiparadigm theory building, data analyzable from multiple paradigms is collected. When data is coded, the coding should be done using multiple paradigms. The researcher must develop the ability to immerse him/herself within each

paradigm, and draw interpretation from them simultaneously. This requires the ability of critical self reflexivity in order to climb out of the researcher's paradigmatic comfort zone (Lewis & Grimes, 1999).

In multiparadigm research, multiple empirical methods sympathetic to different paradigms are employed for analysis. Such research can be done either in parallel or sequentially. In parallel studies, multiple empirical methods are employed on a single phenomenon. Any theoretical conflicts are preserved by depicting these conflicts as opposing perspectives. These perspectives are then taken together to depict the intricacies of the phenomenon. On the other hand, Lewis and Grimes (1999) describes sequential studies as when the:

……..researchers cultivate diverse representations to purposefully inform each other, for the outputs of one paradigm-specific study provide inputs for a subsequent study. Applying lenses in succession, theorists seek to grasp their disparate yet complementary focal points (p. 675).

I see this thesis as a piece of sequential-study multiparadigm research, where multiple research questions were addressed sequentially, using a dominant research methodology for each research question, resulting in an instrument to assess and develop a learning organization. For this reason, I choose to use the term "multiple methodology research," in order to avoid confusion with the different modes of inquiry in multiparadigm approaches. This "multiple methodology approach" is reflected in my doctoral research journey, explained in Chapter 1, where I tried to

explore the nature of the learning organization. As shown in Figure 1.1, the question Q1 was answered by synthesizing the extant literature and using a theoretical-argumentative perspective. I used an interpretivist approach, guided by my experience as a practitioner, to formulate the theoretical framework to bridge the divide between the streams of organizational learning and the learning organization.

To further explore the outcome of Q1, research question Q2 was constructed. I used the Delphi technique to explore research question Q2 and approached the study fairly objectively. I did not allow for any personal biasness to flavor the outcome, but used quantitative techniques to elicit key learning barriers and the sources of these critical barriers. I engaged this aspect of the research using a quantitative paradigm. The outcome of Q2 resulted in further research questions Q3 and Q4.

To restate, the research question Q3 is *"How do individuals initiate a double-loop change?"* When I examine this research question using the 4I framework, it involves two socio-psychological processes.   It involves entrepreneurial intuition of the individual resulting in the initiation of double-loop learning. This type of intuition is cognitive biased, resulting in a re-definition of the initiator's cognitive framework. However, for this learning to be of practical value, it should also result in interpretation. This means an explication of the double-loop learning and a change in the initiator's behavior. Therefore, when I map the research question Q3 to the Burrell and Morgan framework, it has to be engaged using two paradigm quadrants (see Figure 4.3 below): intuition which needs to be engaged using the radical

humanist paradigm and interpretation which needs to be engaged using the interpretivist paradigm.

A similar situation arises when I pose the research question Q4, *"How does a new shared understanding for a double-loop change develop across the organization?"* When double-loop learning takes place and is explicated, a new shared understanding must develop across the organization. This involves the socio-psychological process of interpretation to integration. A cohesive and collective behavioral change must translate from the individual, to the group, to the organizational levels. Therefore, research question Q4 needs to be engaged using the interpretivist paradigm for interpretation, and radical structuralist paradigm for integration (see Figure 4.3 below).

A strict adherent of the Burrell and Morgan framework would criticize this analysis, by saying that paradigm quadrants cannot be crossed. The incommensurability of paradigms is even vigorously defended to this day. However, the incommensurability of Burrell and Morgan's framework has been extensively criticized by suggesting that quantitative and qualitative are two extremes of a paradigm continuum (Morgan & Smircich, 1980), and research can be placed anywhere within the continuum (Alvesson & Deetz, 2000; Mingers & Brocklesby, 1997).

How do I approach the investigation of research questions Q3 and Q4? My position is that it is best to approach these research questions using multiple theoretical

perspectives. The use of multiple theoretical perspectives, in order to engage with different paradigms of Burrell and Morgan's framework, has been suggested by Lewis and Grimes (1999). The use of multiple theoretical perspectives in organizational studies is not new and has been advocated by Allison (1971) and Schwenk (1988). For example, Beech et al. (2002) used multiple theoretical perspectives to explore constraints in developing new knowledge from a single three hour meeting in an organization.

To digress, this is not strictly multiparadigm theory building approach as described earlier. As will be shown, I systematically code the interview data as prescribed by Glaser (1992), and Miles and Huberman (1994). However, I use multiple theoretical perspectives to understand the phenomenon under study, and therefore engage the study using relevant paradigms of the Burrell and Morgan framework (see Figure 4.3 below).

Figure 4.3 below illustrates the multiple theoretical perspectives taken to engage the study. For research question Q3, I use Cognitive theory to understand the process of intuition, and use Complexity theory to gain an understanding on how the process of intuition to interpretation takes place. For research question Q4, I use Identity theory to understand how individuals interpret the question "who am I" in an organizational context, and use Complexity theory to understand how they develop a new shared understanding of "who they ought to be" in a changed organizational context. A more detailed elaboration of Cognitive, Identity, and Complexity theories will be given in Chapters 5 and 6, when dealing with the research questions Q3 and Q4.
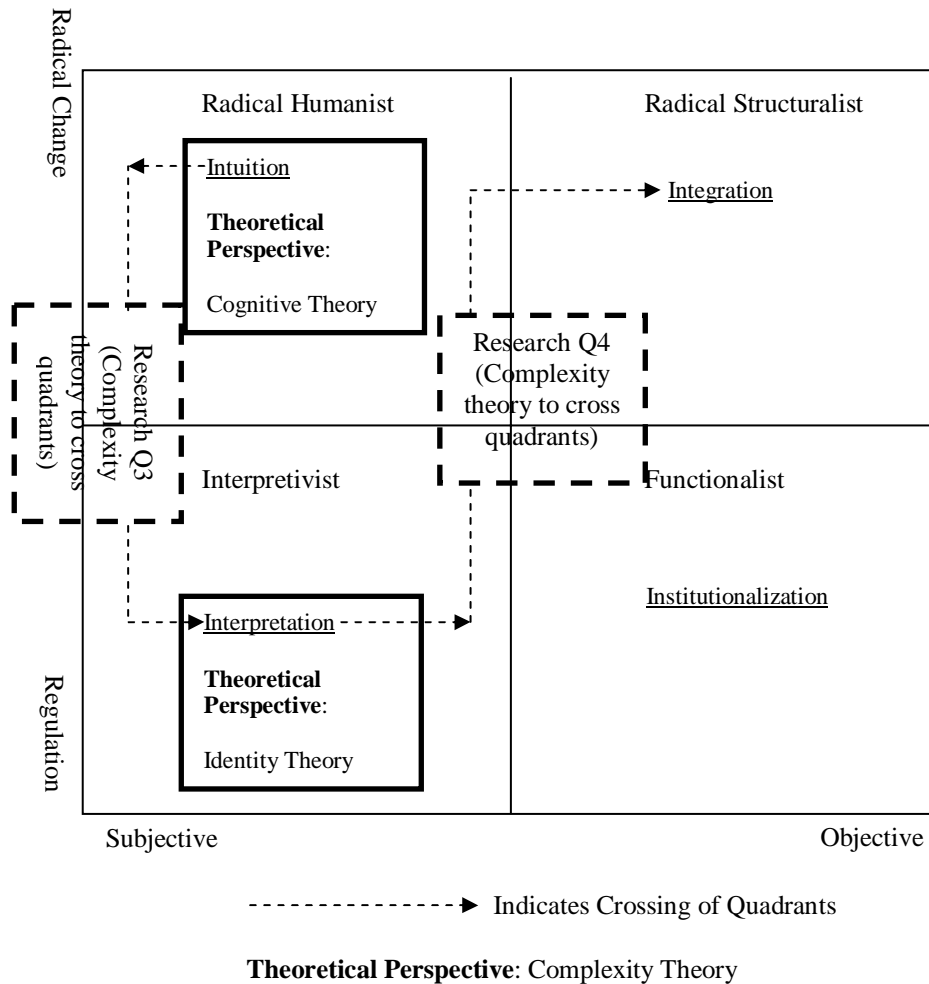
Figure 4.3 – Multiple Theoretical Perspectives for Research Questions Q3 and Q4

The research questions Q3 and Q4 crosses the quadrants of Burrell and Morgan's framework (I do not believe, as do many others, in the incommensurability of paradigms). However, when compared with Creswell's (1994) paradigm continuum these studies can be said to be aligned towards qualitative. The research questions Q3 and Q4 deal with the question "how," rather than "what." Therefore, methodologies sympathetic to the qualitative paradigm are more suitable. For this reason, I chose

the case study method as being the most appropriate research method (Yin, 1994; 2003). In Chapters 5 and 6 I will elaborate on the research design for the case studies, and describe how the case studies were conducted.

Using the insights gained from the sequential studies of research questions Q1-Q4, I then examined specific organizational interventions necessary to develop a learning organization in Chapter 7. When implemented, these interventions give rise to five new orientations or archetypes of a learning organization: genetic diversity, organizational ideology, organizational dualism, organizational coupling, and strategic play. I then constructed an instrument to measure these orientations as a measure of the archetype of the learning organization. This part of the study is intended to answer research question Q5: *"What are the new orientations of a learning organization, and how do I measure them?"* and clearly falls as a quantitative study.

4.4 Ethical Considerations

In conducting the research studies, I followed certain guidelines to enhance the ethical standard of the research:

- Participation in the research was entirely voluntary. I gave the participants the option of withdrawing at any stage of the research project.

- I ensured that the participants were aware, from the beginning of the research study, what would be done with the information gathered. Permission was granted to publish the research work in academic journals, without making any specific references to the names of the organization or the individuals.

- In the case of research question Q4, where the study was conducted in the context of an organization, the support of management was readily, and willingly, given, as it was a project that was initiated by them.

- Finally, approval was obtained from the Ethics Committee of the University of Waikato, for the different types of research activities conducted.

4.5 Author's Background

To some degree, the background of the researcher determines the paradigm preference, and the associated research methodologies. It is therefore essential that I state my academic and professional background.

I was biased towards a quantitative paradigm, primarily due to my academic education as a mechanical engineer. I also completed a Master of Philosophy degree, with a focus on the usage of goal programming in multi-criteria decision making (Sun & Nanayakkara, 1995). Therefore, I found comfort in methods that are orientated towards positivism.

However, having started my professional career as a Plant Engineer, I gradually moved into general management. The last 10 years of my professional career have been in general management, with less involvement in the technical issues of the organization. It was during this period that I gradually developed an orientation towards the qualitative paradigm; managing people required me to engage closely with the "softer" aspects of the organization. I had to engage with my own biases and values when dealing with individuals in the organization. Therefore, at this juncture, I felt I had moved to having no particular paradigm preference. This thesis, with its meta-level multiple methodology research, gave me an opportunity to develop skills in various research methods using multiple paradigm orientations.

4.6 Summary

In this chapter, I attempted to defend the multiple methodology approach that I took in the PhD research. This chapter also shows the need to use multiple theoretical perspectives to investigate questions Q3 and Q4, especially since they cross Burrell and Morgan's quadrants (see Figure 4.3). In Chapter 5, I will elaborate on the multiple case study method that was employed to investigate question Q3.

CHAPTER 5

INITIATING DOUBLE-LOOP CHANGE IN AN

ORGANIZATIONAL CONTEXT

Q3: "How do individuals initiate a double-loop change?"

5.1   Introduction

As Chapter 3 established, individuals have to interface with all levels of learning in order to initiate and explicate double-loop learning. At each of these interfaces, significant barriers to double-loop learning, which not only alters the mental model of the individual, but also results in an overt change in their behavior, raise a fundamental question: "How can an individual gain an insight that is radically different from the beliefs and assumptions that govern his or her mental model (Westenholz, 1993), and how can such an insight be overtly expressed in the organization?"

Existing fundamental beliefs and assumptions usually reside in the organizational culture (Schein, 1993) and generate powerful norms in the organization. Such norms often constrain an individual's cognition, and largely define their cognitive framework.   Therefore,   this   type   of   change   is   extremely   difficult   and acknowledged as a dilemma by Argyris and Schön (1996).   Argyris (2004)

reiterates the same dilemma again in recent work and shows that the lack of an answer continues to hinder the effectiveness of organizations in general and, more specifically when it comes to double-loop change initiation. Other extant literature similarly points to this dilemma, but a satisfactory answer continues to be elusive.

The search for a satisfactory answer has increased in urgency with increasing acknowledgement that the capability for double-loop change initiation is crucial. The current hyper-turbulent environment requires workforces not only to generate creative insights, but also to follow them up with double-loop change initiation in order to quickly implement the necessary innovations, without which the organization rapidly loses its competitive advantage. Single-loop change alone brings incremental improvement, but my experience suggests the need to augment it with widespread and ongoing double-loop change.

Accordingly, this chapter focuses on the knowledge gap that exists at the interfaces between individual level initiation of double-loop learning and organizational contexts. These interfaces are the critical points of interaction of the 'initiator' of double-loop change with the organizational contexts, and determine the degree of success of a double-loop change initiation. Although models exist to explain double-loop change initiation (e.g., Breu & Benwell, 1999; French & Delahaye, 1996; Nortier, 1995), the understanding of these interfaces is limited. A better understanding of these interfaces will go a substantial way towards developing an innovative and flexible organization capable of evolutionary, rather than discontinuous, changes. As discussed in

Chapter 2, such an organization is referred to as a learning organization (Sun & Scott, 2003a), or a generative organization (Rahim, 1995).

What are the socio-psychological processes involved for an individual to initiate a double-loop change? As described in Chapter 4, it involves entrepreneurial intuition and subsequent interpretation (see Figure 4.3). To that end, I concisely review the field of entrepreneurial intuition and its interpretation, and show that a knowledge gap exists in understanding the interfaces between double-loop change initiation and the organizational context. I then explore the relevance of Complexity theory principles to double-loop initiation by the 'initiator,' developing a framework that better focuses on these interfaces. I then present seven real world individual cases of 'initiators' of double-loop change, and describe the case-based methodology used to analyze these cases in order to expand our understanding of the framework. Finally, I will summarize the contribution to knowledge to the field of learning organization, and conclude with some directions for future research.

5.2 Moving From Entrepreneurial Intuition to Interpretation – A Literature Review

The intent of this section is to present the relevant literature on the process of moving from entrepreneurial intuition to interpretation, and to identify the resulting knowledge gap for further investigation. The literature review is not meant to be exhaustive but to consider major research implications in the area.

It is important that I clarify the term "creativity" as a process and show that it has direct link to the socio-psychological process of intuition to interpretation. The extant literature often uses the term "creativity" to mean the development of new and novel ideas, and it is often associated with new product development, novel practices within the organization, or new institutionalized organizational procedures (Shalley & Gilson, 2004). In that usage it primarily deals with the generation of novel ideas. However, once it reaches the organizational level and the ideas are implemented, it is then considered as innovation (Shalley, Zhou, & Oldham, 2004). Therefore, Shalley et al. (2004) provide an interesting, but significant distinction between creativity and innovation. The term "creativity" can be used to mean an incremental insight without a fundamental alteration of the beliefs and assumptions of the organization, or can mean a radical breakthrough brought about by double-loop learning. In my research context, creativity is taken to mean the latter.

Creativity, as the first step for subsequent innovation, can therefore be considered as the combined socio-psychological processes involved in the shift from intuition to interpretation. Intuition involves a more subconscious level, where the individual discerns something new. Intuition is therefore more focused on the cognitive aspect of the individual. Interpretation is the process of explication of what is being intuited, and operates more at the conscious level. Although the process of interpretation involves cognitive aspects, a behavioral element comes into play when language and metaphors are used to give meaning to what is being intuited (Crossan et al., 1999; Nonaka & Takeuchi, 1995). The process of interpretation does not often happen at an individual level, but involves interaction at the group level (Crossan et al., 1999).

Therefore, a review of the literature on creativity is relevant for this Chapter, as the creative process shares the same socio-psychological processes of intuition to interpretation as the double-loop learning process. Although creativity in a more general sense (i.e., encapsulating incremental as well as radical ideas) is not restricted to individuals in certain hierarchical levels (Madjar, Oldham, & Pratt, 2002; Shalley et al., 2004), in my research context, where creativity means a radical breakthrough brought about by double-loop learning, it is usually seen in the upper hierarchical levels of an organization. This is observed for various reasons. Firstly, certain types of external, as well as sensitive internal, information often flow within the upper hierarchical levels (Schultz, 2001). The individuals at these levels are privy to information that challenges the existing beliefs and assumptions of the organization; hence a greater chance of double-loop learning exists at that level. Secondly, there is an implicit assumption in most organizations that legitimacy for double-loop changes lies with the individuals in the upper levels. For these reasons, one often sees double-loop changes initiated by those in the upper hierarchical levels. However, the learning organization ideal goes against these accepted norms and suggests that creativity should be spread through the hierarchy, and result in a flexible organization capable of double-loop change.

There has been some research conducted on the temporal aspects of creativity, especially concerning the change in the mental model or cognitive framework of the individual. Bartunek (1984, 1993) uses dialectical processes to argue that a change in the cognitive framework occurs through an interaction of the old and new ways of understanding. This results in a process of synthesis that she describes as a conflict model (Bartunek, 1984; 1993). Weber and Crocker (1983)

postulate two more models of cognitive framework change: the conversion model and the book-keeping model. In the conversion model, the cognitive framework can change massively and suddenly, usually brought about by dramatic and catastrophic events. In the book-keeping model, the cognitive framework is incrementally fine-tuned with pieces of discrepant and contradictory information. The manner of impact of such contradictions, in an organizational context, has been recently theorized by Seo and Creed (2002), and Oswick et al. (2002). It is my contention that the book-keeping model best suits the learning organization ideal and forms the basis of this research. It makes double-loop change more evolutionary (rather than discontinuous) and best suits the flexible archetype of a learning organization.

Shalley et al. (2004) suggest that the personal characteristics of the individual, and the contextual characteristics of the environment they operate in, affect their creativity. The personal characteristics of the individual are their cognitive styles and their personality aspects. These form part and parcel of the very nature of the individual and can be considered as factors residing at the ontological level. The contextual characteristics do not form part of the individual, but relate primarily to job characteristics, work settings, and relationships with coworkers and supervisors. These form the epistemological level factors that affect the creative process. I have illustrated the affects of the ontological and epistemological level factors, on the creative (i.e., intuition to interpretation) process in Figure 5.0 below. In sections 5.2.1 and 5.2.2, I review extant literature that deals with these factors.
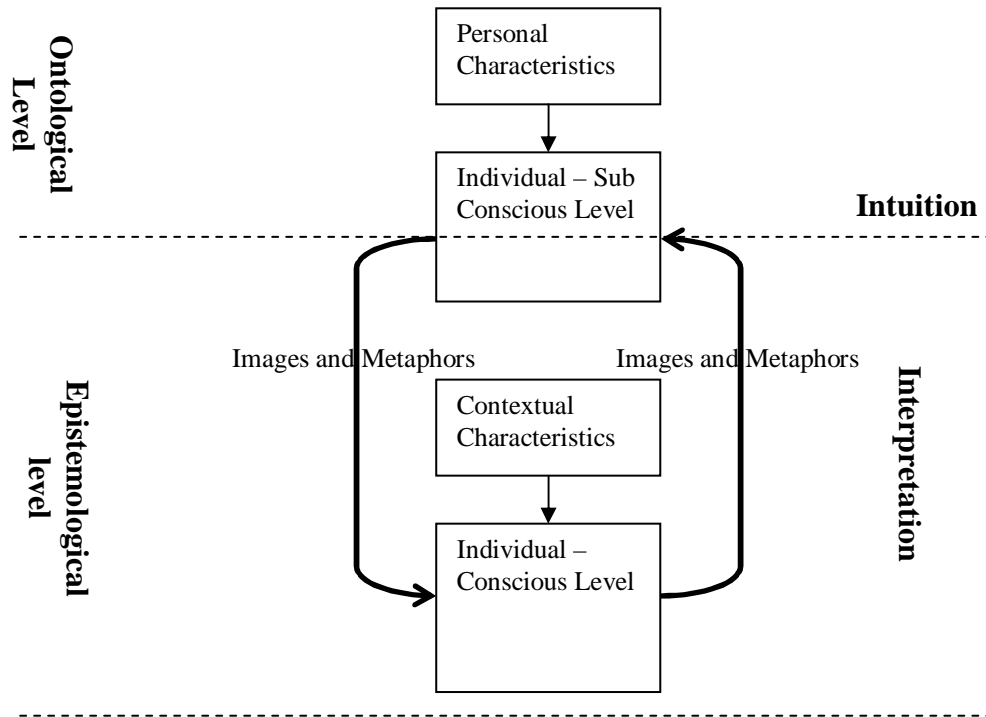
Figure 5.0 – Affects of Personal and Contextual Characteristics on the Creative

Process

5.2.1 Personal characteristics – Ontological level factors

According to Prietula and Simon (1989), an individual's reasoning power suffers

from three inherent limitations: limits of attention, limits of working memory, and

limits to long-term memory. The limits of attention come into play for problems

or issues that are more serious and complex. Individuals can focus on one

problem at a time, and each problem requires their undivided attention. In solving

such problems, the working memory brings in some degree of limitations. The

working memory has limited capacity, and can hold only limited "chunks" of

information at any given point in time. Juggling more than 7 chunks of

information seriously impairs the individual's reasoning ability (Prietula & Simon,

1989). A large part of problem solving requires the individual to access relevant

knowledge from long-term memory. However, access to the use of long-term memory is lost, which is considered as a limitation of long-term memory, if one does not use it regularly (Prietula & Simon, 1989).

Individuals can develop to the level of an expert by overcoming these three limits. Through many years of experience in a particular job, an expert realizes that all problems arising are not new or independent of each other, but have recurring patterns. The expert learns to ignore the irrelevant patterns and then group the relevant patterns to a "chunk" of understanding. This "chunk" is then linked to other "chunks" and the linkage is viewed as a single unit, thus utilizing less working memory. Through this process, the expert is able to recognize patterns in a particular problem that invokes chunks, which again invokes other related chunks, and this linkage enables the expert to activate related knowledge from long-term memory. The expert is thus able to reason analytically in ways that an average individual cannot, and also reason intuitively when familiar patterns emerge almost instantly without much effort. To reach a level of an expert, Prietula and Simon (1989) suggests that it takes over 10 years of experience, and the individual must be able to hold 50,000 chunks or more.

Crossan et al. (1999) describe such an individual as possessing an expert's intuition. However, an expert's intuition recognizes past patterns and mostly operates within their fundamental beliefs and assumptions. Such intuition is useful to exploit past learning and is well suited for a more stable environment (Crossan et al., 1999). What is more critical in an environment of rapid change is to develop an entrepreneurial intuition – the ability to discern novel and frame breaking connections. Such an intuition brings about double-loop learning.

The operation of the mind of an expert is well researched and understood, but there is no clear understanding of the process of entrepreneurial intuition (Crossan et al., 1999). However, there are some personal characteristics, operating at the ontological level of the individual, which influence entrepreneurial intuition. These personal characteristics can be categorized as cognitive styles and the personality aspects of the individual (Shalley et al., 2004).

Cognitive styles: The work of Kirton (1976, 1994) provides us with a significant insight into the cognitive styles of individual. Kirton's Adaptation-Innovation theory suggests that all individuals can be placed in a bipolar continuum. At the extreme ends of the continuum, individuals can have an adaptive cognitive style or innovative style (those with the former are termed as adaptors and the latter as innovators). Adaptors tend to operate within the fundamental beliefs and assumptions, whilst innovators tend to violate the given beliefs and assumptions and come up with frame breaking insights.

Related literature, especially from the field of cognitive psychology, suggests that an individuals' cognitive readiness to learn differs. Some individuals have an aptitude for higher and more complex forms of cognitive processing, whilst others do not (Hale & Jansen, 1994). Individuals having such an aptitude are usually innovators. There are numerous empirical studies that validate this correlation between the individual's cognitive style and their creative ability (e.g., Keller, 1986; Tierney, Farmer, & Graen, 1999).

Personality aspects: Much of the work conducted has been quantitative studies examining the correlation of personality aspects of individuals with their level of

creativity. These empirical studies mostly use Gough's (1979) Creative Personality Scale (CPS) and McCrae and John's (1992) Five Factor Model of Personality (FFM).

In the empirical studies using the CPS framework, innovators are those who assimilate divergent information, posses self confidence, are tolerant with greater levels of ambiguity, and are persistent with their novel ideas (e.g., Barron & Harrington, 1981). Such an individual correlates with a higher ego development stage (Loevinger, 1976). One interesting experiment, which lends further proof to the effects of self confidence (a personality aspect) on creative process, found that individuals receiving accurate and regular feedback of their performance became discouraged and their self confidence was adversely affected. This resulted in a drop in their creative performance (Cannon & Edmondson, 2001).

The five dimensions of the FFM model (i.e., neuroticism, agreeableness, conscientiousness, extraversion, and openness to experience) have been found to have some positive correlation with creativity. For example, research carried out on emotions, a part of the neuroticism dimension, shows that individuals subject to strong negative emotions such as fear, anxiety, distress, and pessimism usually experience a narrowing of perception (Fredrickson, 2001), greatly hindering creativity. However, the dimension that consistently comes out as related to creativity, in most empirical studies, is openness to experience (Feist, 1998; 1999). Individuals trying to seek unfamiliar situations to access new experiences are usually more broad minded, curious, and non traditional (Shalley et al., 2004). Such individuals usually fit the stereotype of innovators.

Therefore, individuals having an innovative cognitive style, with the appropriate personality aspects, are more likely to be intrinsically motivated towards creativity (Zhou & Shalley, 2003). Intrinsic motivation is the willingness and excitement to be engaged in a creative activity for the sake of the activity itself (Utman, 1997). Apart from the ontological factors described above, Shalley et al. (2004) posit that the epistemological factors of contextual characteristics affect creativity via its impact on intrinsic motivation. I now describe some key literature on the effects of contextual characteristics on creativity.

5.2.2 Contextual characteristics – Epistemological level factors

Literature is replete with contextual factors that affect the creativity of individuals. There are six such factors that merit a concise description: Job complexity, relationship with peers and supervisors, deadlines and goals, rewards, evaluations, and work settings.

Job complexity: A complex job, especially with greater autonomy, a high level of variety and significance in the organization - a job that enhances the self identity of the individual - will generate greater intrinsic motivation to be creative (Shalley et al., 2004). Several empirical studies have validated the correlation between job complexity and employee creativity (Farmer, Tierney, & Kung-McIntyre, 2003; Tierney & Farmer, 2002, 2004). For example, Farmer et al. (2003) found that the creativity of Taiwanese employees was positively correlated to their perception of having a strong creative role to play in the organization. Such a creative role identity is brought about by the type of jobs, especially the complexity of the jobs, they were involved in.

Relationship with peers and supervisors: Some studies have shown the influence of peers (i.e., coworkers) on the creativeness of an individual. A supportive peer group, those who encourage and nurture creativity, greatly enhances the intrinsic motivation of an individual to be creative (Farmer et al., 2003). Whereas, an unsupportive peer group can undermine intrinsic motivation by exerting concertive control (Barker, 1999) on their work colleagues.

Similarly, studies have also shown the influence of supervisory leadership style on the creativity of sub-ordinates. A supportive leadership style encourages creativity, whilst a more controlling leadership style diminishes the intrinsic motivation to be creative (Deci, Connell, & Ryan, 1989).

Deadlines and goals: Several studies have shown that creativity diminishes when a tight production deadline is set (e.g., Amabile, Hadley, & Kramer, 2002; Kelly & McGrath, 1985). However, other research suggests that by introducing a creative goal, individuals will focus more on the creative aspect and less on the tight deadline, offsetting some of the negative impacts of tight production deadlines (Shalley et al., 2004).

Rewards: The empirical studies on this contextual aspect have produced mixed results. Some argue that contingent rewards (i.e., monetary rewards and recognition) seek to control individual behavior and diminish the intrinsic motivation to be creative (e.g., Amabile, 1996). Such a view has some empirical support (e.g., Kruglanski, Friedman, & Zeevi, 1971). Others argue that rewards have value by recognizing an individual's competencies and hence boosting the intrinsic motivation to be creative (Eisenberger & Armeli, 1997). Eisenberger and

Rhoades (2001) provide some empirical evidence to support this view. However, the exact influence of contingent rewards remains unclear (Shalley et al., 2004).

Evaluation: The type of performance evaluation can fall into two categories: judgmental and developmental. If the evaluation is to be judgmental and assessed critically, research evidence (e.g., Amabile, Goldfarb, & Brackfield, 1990; Szymanski & Harkins, 1992) suggests that an individual's work tends to be less creative. On the other hand, if the evaluation is developmental and seeks to encourage the individual, then creativity is greatly enhanced (e.g., Shalley & Perry-Smith, 2001; Zhou & Oldham, 2001).

Work settings: The physical layout of the work has been shown to have some impact on employee creativity. Those who work in a congested work environment, where intrusion and disturbance is high, have been shown to exhibit lower creativity (e.g., Shalley & Oldham, 1997; Soriano de Alencar & Bruno-Faria, 1997).

I have reviewed the impact of ontological (personal) and epistemological (contextual) factors on creativity. Most studies have looked at personal and contextual aspects on creativity rather independently, and studies involving a blend of both are limited. This is an area that offers scope for further investigation.

5.2.3 The knowledge gap

One area, which is currently a knowledge gap, is the creative process of the individual. That is the impact of the epistemological and ontological factors on the temporal aspects of creativity. What are the stages an individual goes through in the process of moving from entrepreneurial intuition to interpretation? How do the ontological and epistemological level factors interact at the interfaces of the levels of learning in these creative stages? These are questions that need further research, and can be summed up through one primary research question Q3: *"How do individuals initiate a double-loop change?"*

In order to address that question, the following section shows how Complexity theory is a useful theoretical perspective to understand the stages an individual goes through in the intuition to interpretation process. Complexity theory enables the construction of a theoretical framework for investigating the seven individual cases who have each initiated double-loop changes in their respective organizations. Let me re-iterate by stating that the study is not about the inexact science of mental reconstruction (Crossan et al., 1999), but, rather an observational study of the temporal processes in double-loop learning.

5.3   Complexity Theory – A Framework to Understand the Stages in the Intuition to Interpretation Process

How are the principles of Complexity theory relevant to double-loop change initiation by the 'initiator,' in an organizational context?   To explore this relevance, I will begin by briefly summarizing the principles of Complexity theory.

Chaos theory and Complexity theory are frequently used interchangeably, creating a degree of confusion in the mind of the readers (Pascale, Millemann, & Gioja, 2000).   Unlike Pascale et al. (2000), where the authors contend that there is nothing in common between Chaos and Complexity theories, this article finds sympathy with the views of McKie (2001) that:

> Complexity shares conceptual territory with chaos: Both foreground the loss of control by conscious entities; both acknowledge persistent unpredictability; and both engage with predominantly nonlinear behavior (p. 121).

Although Chaos theory originated along technical lines, and is a predecessor to Complexity theory, it is characterized by disciplined chaos. It is observed to have a surface structure underpinning irregular behavior of its components at the more micro level (McKie, 2001).   Such a surface structure can be mathematically defined as a "strange attractor," and captures the holistic and long term dynamic behavior (Cohen & Stewart, 1994).   Attractors are thus emergent phenomena of a dynamic system. The surface structure is something that the dynamic system

converges towards, in the longer term, but in a "strange" way its shape and boundaries are not known in advance. It can only be seen by observing, in the longer term, where the initial conditions of a chaotic system take it (Cohen & Stewart, 1994). This is why such a system is said to be characterized by bounded instability (Palmer & Parker, 2001) and accounted for by relatively few rules (McKie, 2001).

A chaos system evolves in a non-linear way, different from the cause-and-effect change of a linear system. For example, a trivial change in the initial condition can lead to huge variations in the longer term. This was an accidental discovery by Edward Lorenz, who, while running computer-simulated weather predictions, discovered that trivial rounding errors at the beginning of the experiment, led to huge variations in the long term weather forecasts. This led him to pose an interesting question "does the flap of a butterfly's wings in Brazil set off a tornado in Texas?" (cited in McKie, 2001, p. 120). Researchers have applied such conceptualizations from Chaos theory to explain organizational crisis such as Intel's Pentium chip disaster (Murphy, 1996), and the crash of Enron.

Complexity theory deals with complex systems that are constituted by dynamic agents interacting with one another and their environment. Such nonlinear behavior at the agent level is affected by nonlinear feedback loops, and the complex system has the unique property of self-organizing to a new form (Conveney & Highfield, 1995). Therefore, although conceptual affinity exists between Chaos and Complexity theories, the primary distinction is the latter's emphasis on the self-organizing capability of a complex system (Conveney & Highfield, 1995). This is why such systems are referred to as Complex Adaptive

Systems (McElroy, 2000) or Living Systems (Pascale et al., 2000), which can be powerfully applied to the business organization for explaining organizational change (e.g., MacIntosh & MacLean, 1999), for explaining collective learning necessary for organizational renewal (e.g., Backström, 2004), and for explaining knowledge generation in group discussions (e.g., Beech et al., 2002).

The concept of self-organization of a complex system was first observed in the field of non equilibrium thermodynamics (Prigogine & Stengers, 1984). Prigogine and Stengers describe a stage when a complex system is driven far from its equilibrium state. It is in this stage that self-organization takes place. Many (see Faulkner & Russell, 1997; MacIntosh & MacLean, 1999; McElroy, 2000) involved in the application of the concepts of Complex Adaptive Systems refer to this stage as "the edge of chaos." It is in this stage that a new order emerges through the operation of a set of simple order generating rules.

Complexity theory is based on the premise, which many CEOs can confirm, that a complex system cannot be directed along a linear path. However, it is possible, especially during sensitive initial conditions, to influence the manner of disturbance and intervene in ways aimed to approximate a desired, but not tightly specified, outcome (Pascale et al., 2000) in accord with the following principles:

Principle 1: A complex system is initially in an equilibrium state. At this stage, the system is less responsive to changes in the external environment.

Principle 2: When energy is imported (e.g. through a threat or compelling opportunities in relation to an organization as a complex system),

the system is driven towards instability to a stage described as "the edge of chaos." It is at this stage that the system is most likely to evolve to a new form. However, at these points bifurcation is possible: the system can regress to the earlier equilibrium state; or can self-organize to a different state altogether (Pascale et al., 2000).

Principle 3: When this instability takes place for a sufficient period, the system self organizes to a new form by the operation of relatively few simple order-generating rules.

Principle 4: A complex system cannot be directed along a linear path for self organization. Nonlinearity occurs due to unforeseen consequences. However, it is possible to dictate to some degree the manner of its disturbance, and provide non-linear feedback which can positively or negatively influence self organization, thereby approximating a desired outcome.

Following this brief overview, I attempt to show its relevance to double-loop change initiation by the 'initiator', in an organizational context. The framework depicting this is illustrated in Figure 5.1 below. Prior to elaboration, I will describe two key assumptions underpinning the framework:

Assumption 1: It is individuals who learn on behalf of the organization (Argyris & Schön, 1996). Therefore double-loop change initiation begins at the individual level. Complexity theory, often applied to the organizational level, will be applied to the individual level in an organizational context.

Assumption 2: Double-loop change initiation necessitates a replacement of the old cognitive framework or mental model of the 'initiator'. In this chapter I explore the gradual and incremental replacement of the old cognitive framework, termed as the "book keeping model" (Weber & Crocker, 1983). This aspect was elaborated earlier in section 5.2.

Onset of
Contradictions

Double-loop Change Initiation Process	Cognitive Framework (n)	Cognitive Disconfirm State	Cognitive Framework (n+1)
Characterized by:	Dominant Beliefs and Assumption	Contradictions or Inconsistencies	Evolving a New Cognitive Framework and Behavioral Change
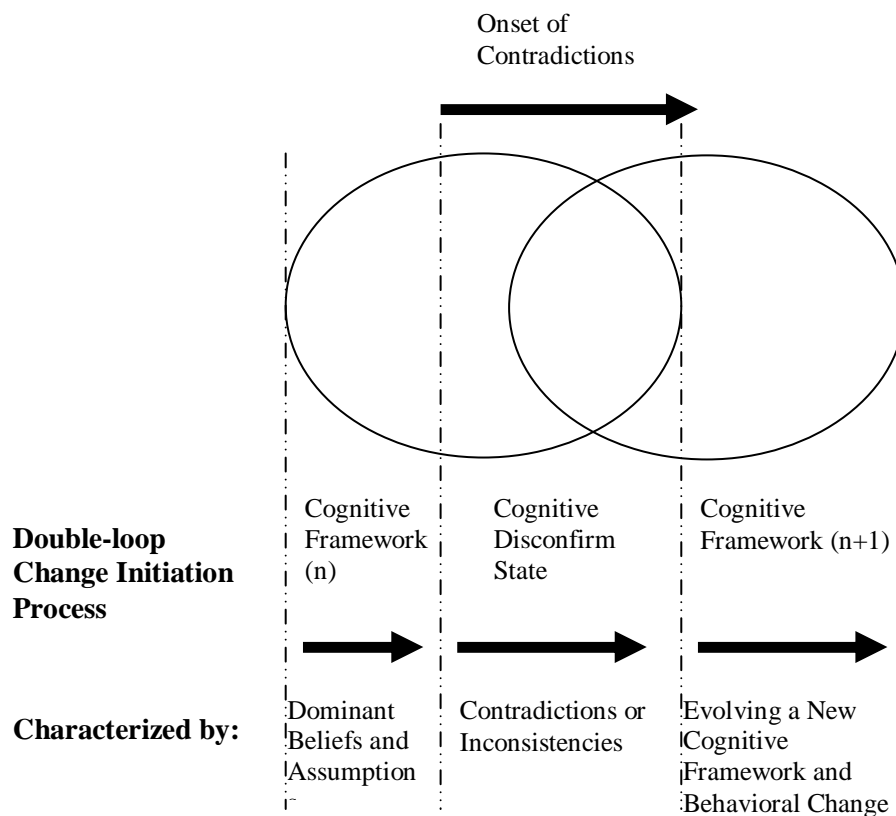
Figure 5.1 – Framework for Double-Loop Change Initiation by the 'Initiator'

(Source: *Sun & Scott, 2005b*)

An organization is often bounded by its dominant beliefs and assumptions. These dominant beliefs and assumptions often reside in the organizational culture, reflecting an organizational climate where cherished beliefs and practices are uncontestable. When such dominant practices are successful, they tend to elevate the positive emotions and hence the self esteem of individuals (especially those of

management), leading Pierce and Gardner (2004) to suggest the presence of an organizationally-based self esteem. This often defines the cognitive framework or schemata of the individual (Balogun & Johnson, 2004; Bontis et al., 2002), illustrated as cognitive framework (n) in Figure 5.1. These cognitive frameworks govern an individual's intuition and interpretation of events by acting as cognitive filters. Relevant information is filtered, leading the individual to hone in on issues perceived to be relevant, rather than actually relevant, to the specific circumstances. Such a cognitive framework is constructed by past experience, especially when it is shaped by past successes, and, as discussed previously, the individual can develop to the level of an expert. Ironically, this expertise might result in too much reliance on past patterns, inhibiting the recognition of approaching instability not previously experienced, signaling an ingrained cognitive framework. This characterizes the equilibrium state of a complex system (Principle 1 of complex systems).

Whilst the cognitive framework is the surface level bounded-ness, the component level randomness is the array of disparate information that an individual constantly deals with, especially in the current hyper-turbulent environment. Information that signals inconsistency of the current cognitive framework (n) can be termed contradictions (see Seo & Creed, 2002), and can arise from within the organization (e.g., decline in performance, or inefficiencies) or arise from outside (e.g., signals from the market, industry, or competitors). It is these contradictions that create cognitive discomfort by destabilizing an individual's current cognitive framework (Oswick et al., 2002). This is the cognitive disconfirm state (see Figure 5.1), and finds a parallel with the 'edge of chaos' stage of Complexity

Theory (Principle 2 of complex systems), and is the most likely state for a double-loop solution to emerge (McElroy, 2000; Oswick et al., 2002).

The less understood phase of the double-loop change initiation is the evolving of the new cognitive framework (n+1) (see Figure 5.1), reflecting a new set of beliefs and assumptions for the individual (Principle 3 of complex systems). This results in an expressive or overt behavioral change of the individual, consistent with the emergence of a new cognitive framework (n+1). Reflecting on the 4th principle of complex systems, the importance of non-linear feedback mechanisms is essential for evolving this new cognitive framework (n+1). Such non-linear feedback occurs both from within and outside of the organization. Examples would include: providing an environment where the individual is psychologically safe to question the dominant routines of the organization (Argyris & Schön, 1996); providing opportunities for feedback and dialogue (Watkins & Marsick, 1996); gathering feedback on external environmental changes (Dibella & Nevis, 1998); and allowing for experimentation (Dibella & Nevis, 1998).

Complexity Science principles can thus be connected to double-loop change initiation, and can crystallize our understanding of the dynamics involved in the interfaces between individual level initiation and the organizational context. This is encapsulated in the framework illustrated in Figure 5.1. This framework focuses on the critical areas of interfaces, which will be explored using real life individual cases in the sections to follow. These areas of interfaces are elaborated as a set of four research questions (RQ1-RQ4), and guide these case study analyses. These four research questions, when answered, provide an overall

answer to the primary research question Q3: "*How do individuals initiate a double-loop change?*"

1. The Complexity Theory perspective describes the 'initiator' as one having a cognitive framework (n), but does not elaborate on the extent of embedded-ness. By embedded-ness I mean the extent of ingraining of the individual's cognitive framework. Therefore my first research question (RQ1) is: "*What is the extent of embedded-ness of the 'initiator's' cognitive framework prior to the double-loop solution coming into mind?*"

2. The complexity perspective suggests the onset of contradictions as enabling descent into instability, driving it to the cognitive disconfirm state which parallels the 'edge of chaos' stage. Are contradictions the only driver towards double-loop change initiation? Therefore, my second research question (RQ2) is: "*What drives the 'initiator' towards a double-loop solution?*"

3. As discussed previously, the evolution of a new cognitive framework (n+1) is little understood. I therefore pose two additional research questions. (RQ3) is: "*Does a frame-breaking insight or the evolution of a double-loop solution always result in immediate action/behavioral change of the 'initiator'?*", and

4. (RQ4) is: "*What makes the 'initiator' enact (expressively) the double-loop solution?*"

5.4   Methodology Used

I utilized the case study approach to investigate the research questions RQ1-RQ4 (as stated previously, these questions cumulatively addresses the primary research question Q3). As stated in Chapter 4, research question Q3 involves the socio-psychological process of entrepreneurial intuition to interpretation. When looked at from Creswell's (1994) perspective, research question Q3 is best engaged using the qualitative paradigm[6], and hence the case study approach with a Grounded Theory technique to analyze the interview data is appropriate.

5.4.1 The interview process

In this research, the entity under investigation is the individual, the 'initiator' of the double-loop change. Therefore it is imperative that the participants are suitable for the purpose of the research. They have to be 'initiators' of double-loop change and their cognitive replacement has to follow the book-keeping model. Seven individuals, based primarily on my personal contacts, were chosen. Since the unit of analysis is the individual, and several individuals are involved, I treat this as a multiple case study approach. Although a multiple case study approach requires greater effort, it increases the scope for generalization. The degree of transferability outside of the contexts of the multiple cases is described by qualitative researchers as 'fittingness' (Davis, 1997; Lincoln & Guba, 1985)[7]. In order to further strengthen 'fittingness,' the participants were selected from

---

[6] The qualitative paradigm of the intuition to interpretation process is dealt with in Chapter 4.
[7] The term 'fittingness' used by qualitative researchers bears similar meaning to the term 'external validity' used by quantitative researchers (Davis, 1997).

different backgrounds, varying industries, and a wider range of industry experience. The details of the participants are illustrated in Table 5.0 below.

Table 5.0 – Description of the Participants (the 'Initiators')

Participant	Position in the Organization	Description of the Double-Loop Change
JS	Associate Professor	Introduced student centered independent learning into University teaching when it was primarily lecture based (based in New Zealand).
NG	Chief Executive Officer	Introduced seamless double shift concept in the apparel sewing floor when the earlier practice was to have separate work-in-progress (WIP) inventories for both the shifts (seamless implies sharing of WIP by the two shifts) (based in Sri Lanka).
JC	Professor and Head of Department	Changed his cognitive framework that guided his previous behavior as the Department chair in the University (based in New Zealand).
AF	IT Manager	Introduced electronic based data capture for cattle farmers in rural New Zealand and improving the effectiveness of the entire life-stock data analysis process (based in New Zealand).
ED	Chair Person	Changed a child care center to a child edu-care learning environment. The participant was the chair person of the Trust (based in New Zealand).
EW	Executive Director	Introduced an Executive MBA program into the University that was pre-dominantly an undergraduate school. This involved some radical changes in University practices (based in New Zealand).
SN	HR Manager	Introduced novel occupational health and safety practices into an automobile manufacturing plant based in Australia that dramatically improved its standards (based in Australia).

Adapted from *Sun and Scott (2005b)*

It was important to ensure that the change was double-loop and not single-loop, and that their cognitive replacement followed the book-keeping model. Thus, the participants were asked to relate a specific double-loop change made and track the progress, both prior to the change coming into mind and the process thereafter. This was done prior to the face to face interviews. Few guidelines were given to the participants in order to ensure that the solution was double-loop and followed the book-keeping model. They were:

- The learning must be radical and changes the underlying beliefs

- Prior to the learning taking place, the individual must be successful with the previous behavior.

- The solution must gradually and incrementally evolve – not sudden

A gap of a week or more (depending on the participants' schedule) was given to the participants to reflect on the specific double-loop change initiation that would be discussed in the interview process.

Yin (1994; 2003) describes several data sources for a case study methodology: interviews, direct observations, participant observations, documents, archival records, and physical artifacts. However, in this research, I relied solely on the interviews. The research aims to examine, at the individual level, the cognitive and behavioral implications in a double-loop change initiation. Therefore, due to the peculiar nature of the research, I opted to rely solely on data generated through interviews and designed the study to gather a rich and thick description from the seven participants. I also made notes, based on my observations and my background knowledge of the participants.

The interview format can range from being totally open-ended to completely structured, with a pre-determined set of interview questions. Therefore it is essential that the interview format is finalized early in the research design process (Bordens & Abbott, 1991). This research was designed to provide participants with sufficient leeway to probe into deep seated emotions, and, often, the subconscious aspects of their intuitive process. This was approached by asking some pre-determined leading questions and then using unstructured probing questions as the interview progresses. Therefore, the interview format took the middle ground of a semi-structured format with the following as leading questions:

1. "Think about a time period prior to the double-loop change even entering your mind. What were your thoughts and feelings of the former practices?"

2. "What were the reasons that drove you to think of this change?"

3. "Elaborate on your thoughts and feelings during the period when you were still contemplating the change?"

4. "What were the driving factors that made you go public with the change?"

Each interview ranged from 45 – 60 minutes and was tape recorded. The interviews were then transcribed verbatim, and given to the participants for their review and corrections if necessary. In order to ensure that I did not bias the interview in any way, I adhered to the following protocols:

- I present myself, as far as possible, in neutral fashion, and not give any personal, positive or negative impressions (through body language or any verbal effects) on the statements made by the interviewees (Lee, 1993).

- The only cues I used were silence, particular sounds such as "uh huh" and "umm," or hand gestures. These cues were probes to get the interviewees to elaborate or ponder deeper into a particular line of thinking (Lincoln & Guba, 1985).

I had no problem with the interviewees being honest and open, as they were confident that the transcribed interviews would be used solely for this research purpose. The seven interviews were conducted over a three week period after the initial contact was made.

5.4.2 Data analysis

Due to the qualitative nature of the research questions, I employed the Grounded Theory technique of Glaser (1992) to analyze the interview data. Grounded Theory was originally developed for nursing research (Glaser & Strauss, 1967), but it has been adopted in other fields of social science. Grounded Theory techniques were developed to build theory in a purely inductive manner, grounded primarily on the data. This is in contrast to deductive theory development, where theory building precedes empirical investigation.

The researcher must be capable of identifying variables, and interrelationships between these variables, from the set of data. The ability of the researcher to understand the data is influenced by a variety of factors such as his or her

professional and personal experiences, theoretical perspectives, and preferences. Therefore, using pre-existing theories to guide the researcher's understanding of data is considered acceptable (Strauss & Corbin, 1990). For example, Fox-Wolfgramm, Boal, and Hunt (1998) used a pre-existing theoretical framework of 'tracks of change' to understand first order changes in two banks in the United States. I therefore argue that my approach of building an initial theoretical framework using pre-existing theories (see Figure 5.1), and using that initial framework to guide my analysis of data, is academically acceptable. Grounded Theory techniques generally follow a three step sequence of open coding, axial coding, and selective coding.

Open coding: I began the open coding by identifying incidents from the transcribed interviews. An incident is a subset of data containing any noun or verb (or usually a combination of both), which describes some actions or opinions that provide potential insight into the research questions being addressed. These incidents can be several words, a sentence, or even a whole paragraph from the transcribed interviews. I grouped these incidents into four distinct phases, representing four distinct temporal periods, as they appeared in the case studies:

Phase 1 – A period prior to any double-loop solution entering the 'initiator's' mind.

Phase 2 – A period when the 'initiator' was faced with ongoing problems and issues with their current cognitive framework.

Phase 3 – A period when the 'initiator' evolved a double-loop solution. This is primarily at the cognitive level of the individual.

Phase 4 – A period when the 'initiator' began to be actively involved in the enactment or expression of the double-loop solution.

Although the four semi-structured interview questions, described previously, can be mapped to the four temporal phases described above, it was not an easy task grouping the incidents into the four distinct phases. I had to read every sentence and determine which distinct phases they belonged to. I then organized the related incidents into concepts. Appendix 5 shows the incidents generated from the sets of seven interviews, its categorization into the four distinct phases, and the grouping into concepts. Appendix 6 shows the frequency of occurrence of the concepts for each participant in the four distinct phases.

In the next step, I further aligned these concepts into relevant categories. The incidents, concepts, and categories follow a hierarchy, described as a bottom-up approach to open coding (Dillon, 2002). After analyzing five interviews, I found no new codes and patterns emerging, suggesting that saturation had been reached. I, however, continued to finish analyzing the interviews of the seven selected participants.

Axial coding: In this stage, I looked for any relationships existing in the categories, using a combination of inductive and deductive thinking, and grouped and theoretically aligned these categories into phenomena. The primary purpose of the axial coding stage is to restructure and build data into patterns that reveal links and relationships (Collis & Hussey, 2003). Figure 5.2 below shows the formulation of the concepts, categories, and phenomena leading up to the axial coding stage.

Once the axial coding stage is completed, a good understanding of the possible relationships and links emerge. However, I did backward tracking to see if the phenomenon adequately represented the original incidents. A few original incidents were not adequately represented by the phenomena, but I did not consider them serious enough to dent the validity of the analysis. These types of anomalies do exist in this type of research (Collis & Hussey, 2003), and represent the complexity and non-uniformity of the real world.

PHENOMENA	CATEGORIES	GROUPING OF CONCEPTS
PHASE 1		
Extent of embed ness	Behavioral embed ness	Scripted behavior
		Success with scripted behavior
	Behavioral attachment	Attachment to scripted behavior
	Neutral attitude	Neutral attitude
		Interest in the subject matter
PHASE 2		
Degree of mismatch	Individual mismatch	Misaligned interests
		Unsustainable
	Organizational mismatch	Variations in existing practices
		Inefficiencies
		Changing requirements
		Lack of resources
	External pressures	Pressure from external environment
Response to the mismatch	Response to the mismatch	Escape as a response
		First order change or incremental learning
PHASE 3		
Departure from current norms	Recognition of the solution	Recognizing the need for change
	Process of formulation of solution	Formulation of solution
		External factors influencing solution
		Individual experiences influencing solution
Constraints in enactment	Constraints in enactment	Organization constraints affecting solution
		Individual constraints affecting solution
PHASE 4		
Internal drivers towards enactment	Initiator's vision	Individual's vision
	Confidence of the initiator	Individual confidence
		External support
External drivers towards enactment	Supportive environment	Management support
		Organizational support
		Empowerment
		Minimization of structural constraints
	Safe environment	Psychological safety
Experimentation	Experimentation	Experimentation
		Success in experimentation
		Expressing the radical solution
Regression	Regression	Regression

Figure 5.2 – Formulation of Concepts, Categories, and Phenomena (Source:

Sun & Scott, 2005b)

Selective coding: This is the final stage and involves a more abstract level of analysis. Selective coding is conducted by associating the relevant phenomena with the research questions RQ1-RQ4 (see below), and then developing a storyline for the research questions.

RQ1: What is the extent of embedded-ness of the 'initiator's' cognitive framework prior to the double-loop solution coming into mind?

Associated phenomenon: Extent of embedded ness

Associated phenomena: Degree of mismatch, response to the mismatch

RQ2: What drives the 'initiator' towards a double-loop solution?

Associated phenomena: Degree of mismatch, Response to the mismatch

Associated phenomenon: Departure from current norms

RQ3: Does a frame breaking insight or evolution of a double-loop solution always result in immediate action/behavioral change of the 'initiator'?

Associated phenomenon: Constraints in enactment

RQ4: What makes the 'initiator' enact (expressively) the double-loop solution?

Associated phenomena: Internal drivers towards enactment, external drivers towards enactment, experimentation, and regression

The construction of appropriate answers to these questions is influenced by the entire coding process and the patterns that subsequently emerge. Here again, the preconceived theoretical framework, illustrated in Figure 5.1, influenced my storytelling.

5.5 The Results of the Data Analysis

With the selective coding completed, I further developed the framework illustrated in Figure 5.1. The refined theoretical framework is illustrated in Figure 5.3 below. This refined framework shows four stages the 'initiator' transits through, and will be referred to in the discussions of the research questions RQ1-RQ4. Although the terminologies will be explained at point of first use, a brief summary of it is initially provided with the Figure 5.3 below.
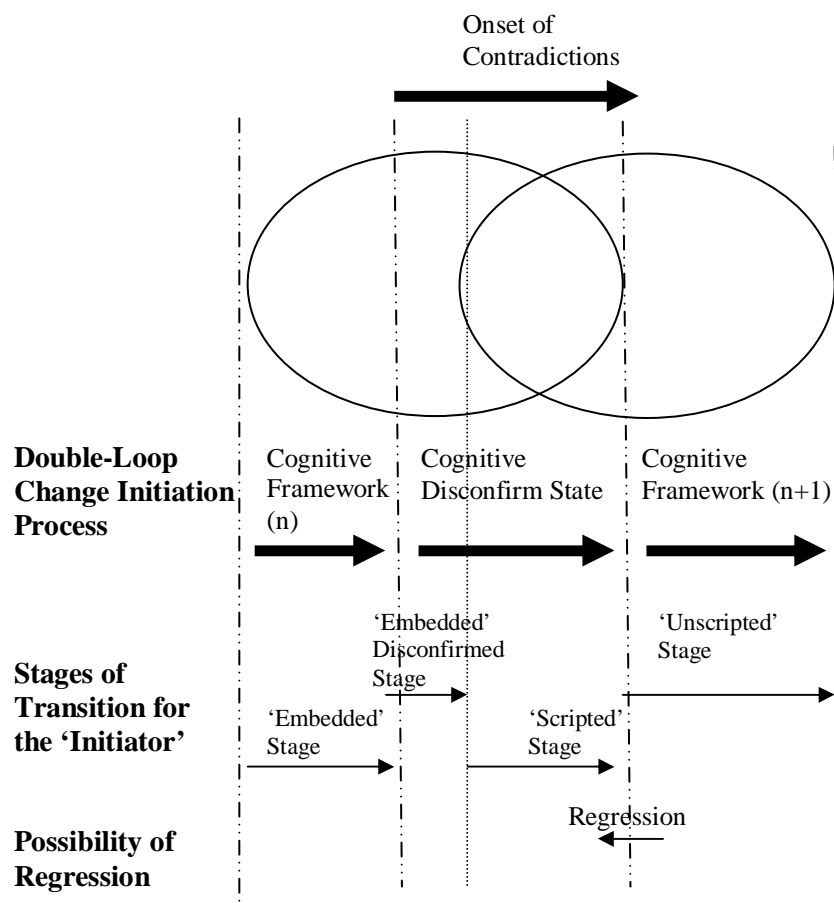
Figure 5.3 – Detailed Framework Elaborating Stages in Double-Loop Change Initiation (Source: *Sun & Scott, 2005b*)

> **Brief Definitions**
>
> **'Embedded' stage** – The individual is emotionally and cognitively comfortable with the current scripted behavior.
>
> **'Embedded discomfited' stage** - When contradictions arise in the organization, the current scripted behavior can lose its attractiveness, driving the individual to an emotionally discomforting stage.
>
> **'Scripted' stage** - With continuing contradictions, the cognition can be driven to a discomfort zone (Oswick et al., 2002), where a frame breaking insight can occur. The individual still engages in the current scripted behavior, but is cognitively redefined.
>
> **'Unscripted' stage** - When there is organizational and management support for the double-loop solution, it becomes increasingly attractive, pushing the individual to an emotive comfort zone where an overt expression takes place.

5.5.1 Answers to research question RQ1

RQ1: What is the extent of embedded-ness of the 'initiator's' cognitive framework prior to the double-loop solution coming into mind?

The state the 'initiator' is in depends on the extent of embedded-ness of their current cognitive framework. This is reflected in their degree of emotional attachment to the current scripted behavior. The current scripted behaviors reflect the dominant beliefs and assumptions of the organization. However, what emerges in my analysis is that 'initiators' view current scripted behavior in a detached manner. For example, JS was an efficient lecture based teacher. However, he had no attachment to that method of teaching:

I can do it (i.e., current scripted behavior) well, but it wasn't feeling natural.

Similarly, NG viewed the successful practice of keeping separate work-in-progress stocks for the two separate shifts in a detached manner:

> I didn't see much wrong in that (i.e., current scripted behavior). In fact I didn't think much about it.

This suggests that 'initiators' are in transition between the 'embedded' and 'embedded discomfited' stages (see Figure 5.3). An 'embedded' individual is one who has deep attachment to the current scripted behavior, to the point that their psychological well being is tied to their current organizational context (Seo & Creed, 2002). An 'embedded discomfited' individual is one who shows concern for the declining outcome when using the current scripted behavior, making it increasingly unattractive. 'Initiators' can thus see a mismatch in current scripted behavior earlier on, before they become unsustainable.

What makes the 'initiator' view current scripted behavior in a detached manner? The individual cases suggest that it is dependent on two factors: the preference of the individual, and their interest in the subject matter. Individuals differ in their preference for (more or less) stability versus change (Eneroth & Larsson, 1996). In the individual cases, the 'initiator' showed a greater preference for change, displaying characteristics of risk taking. For example, NG was willing to go against the dominant practice of the industry of maintaining separate WIP for the two shifts, and experiment with a seamless double shift concept:

> That risk I was willing to take.

SN, who moved recently to Australia, was willing to take the risk of introducing novel health and safety practices in the automobile plant:

> Being the person I am, I wanted to prove everyone wrong.

Coupled with a preference for change, the 'initiator' showed a clear interest in the subject matter as well. For example, JS research interest and focus has always been in the scholarship of teaching. ED had a keen interest in the child care center because his child was involved in the center.

This combination of 'preference for change' and 'interest in the subject matter' enables the 'initiator' to remain impersonal to the current scripted behavior, and look for new ways of enhancing current performance.

5.5.2 Answers to research question RQ2

RQ2: What drives the 'initiator' towards a double-loop solution?

The degree of mismatch (or contradiction) is seen to be a major driver towards a cognitive re-definition. By cognitive re-definition I mean the formulation of a double-loop solution. These contradictions are seen to occur at the individual level (i.e., individual mismatches) and organizational level (i.e., organizational mismatches). At the individual level, the contradictions conflict with the interest of the 'initiator'. The 'initiator' becomes uncomfortable, and/or discontented, or feels unnatural towards the existing practices. For example, JS could not see the benefit of lecture based teaching:

> That appealed to me; because I couldn't for the life of me see the benefits of copying down all
> the notes off the black board, which was the way things were done.

ED found the practices in the child care center uncomfortable and unattractive:

> So I came on board and sat and watched and I realized that things that were important to my
> mind and apparently not important to others…..that in fact we had fallen behind in times and
> certain practices in the center were no longer considered appropriate or even very nice…..for
> example you entered the center to be met by a child being changed on a changing mat.

Some of these individual level contradictions are dictated by previous experiences and/or individual likes and dislikes. At the organizational level, the contradictions appear to occur through changing requirements, inefficiencies due to the inability to perform to changing expectations, lack of resources, or variations in existing practices when compared with similar organizations. For example, JC found the role as a department chair time consuming. This distracted him away from the increased focus of the university towards performance based research.

These contradictions drive the 'initiator' towards cognitive discomfort with current scripted behavior (see Figure 5.3), driving the cognitive framework toward chaos. It is observed in the individual cases that the 'initiators' lived with these contradictions for a period of time. This is recognized as the 'embedded discomfited' stage in Figure 5.3. Some of the participants engaged in single-loop changes whilst at this stage, without challenging the existing beliefs and assumptions, but experienced only temporary relief.

5.5.3 Answers to research question RQ3

RQ3: Does a frame breaking insight or evolution of a double-loop solution always result in immediate action/behavioral change of the 'initiator'?

As discussed in section 5.5.2, contradictions are the factor driving the 'initiator' towards a double-loop solution. These contradictions create cognitive discomfort in the minds of the 'initiator', increasing the likelihood of a cognitive re-definition (Oswick et al., 2002). The previous experience of the 'initiator,' external information such as information from other organizations, conferences, books, and emerging technologies, combined with their creative ability, facilitated this cognitive re-definition.

What became clear is that the formulation of a double-loop solution does not necessarily result in its immediate enactment. There were constraints at the individual and organizational level preventing an immediate enactment. At the individual level, there were initial fears brought about by a lack of confidence in the solution. At the organizational level, the prevailing culture of the organization, the relationships in the organization, and the egos of senior managers constrained immediate enactment. The 'initiator' thus remained in this stage for a period of time with an espoused solution (i.e., a double-loop solution), which is different from the current beliefs and assumptions of the organization. I have termed this stage as 'scripted' (see Figure 5.3). The word 'scripted' is used because the behavior is consistent with current practices, although a cognitive re-definition has taken place. For example, JS lived with the idea of independent student learning for a period of time, before explicating it:

That is what happened…I can do it well, but it wasn't feeling natural. So being a reflective type, I started to think as to why I was having that feeling. Through the experiences, I managed to talk through…..and hence the solution of independent student learning….and a sense of disquiet about the existing practices.

ED lived with a radically different solution for the child care center (i.e., to turn it into a child edu-care environment) for a period of time:

I was an outsider, literally from the UK. I arrived in New Zealand and maybe had one or two slightly different ideas, although not having children before that time. I don't think I had any preconceived notion; it was just…..maybe there were different ways of doing things.

5.5.4 Answers to research question RQ4

RQ4: What makes the 'initiator' enact (expressively) the double-loop solution?

The drive towards enactment of the solution is influenced by three factors. These three factors determine the attractiveness of the conceived solution, and hence of the new behavior.

The first factor is the internal drivers, which are primarily dependent on the 'initiator.' The 'initiator's' self confidence enables them to be self contained. They have a clear vision of what they want to achieve, have the courage to step forward, and constantly looked at challenging themselves. This is reflected in the following statement of SN:

> The rest of the plants were looking at us with much skepticism and had an "it will never happen" attitude. I decided to take on the challenge. I knew we were being observed by those within the company and from the unions outside. Being the person I am, I wanted to prove everyone wrong. I also wanted to prove to myself that I can take on a challenge in a foreign country.

The self contained 'initiators' insulated themselves, to some degree, from the effects of the organizational factors. The solution is seen as a means of challenging one's own limits, and is a key factor in enhancing the attractiveness of the conceived solution.

The second factor is the external drivers which are primarily organizational factors. The main external drivers are a supportive and a safe organizational environment. A supportive environment constitutes management support, organizational support primarily from colleagues, empowerment to decide and act, and minimization of any structural and resource constraints. For example, EW relates the support he got when embarking on the new MBA program:

> It was easy to set up, the University gave me a lot of support which surprised me, as I was always used to dealing with Universities where anyone dealing with Executive education, would be pushing the Universities rules and regulations. First time I went to see the Registrar to see where the battle lines are to be drawn, and his response was "how can we make it as easy as possible to introduce the program?"

JS relates the support he got from his departmental colleagues for independent student learning:

> It wasn't euphoria…there was great interest…in…I think it was me that was putting the idea forward…an acceptance that this makes sense…and if JS was the instigator…and I suppose the champion of this particular aspect…then they (i.e., the department) would work with that as best they could.

A safe environment primarily consists of the psychological safety to question and enact the solution without the fear of any reprisals (Argyris & Schön, 1996). For example, NG talks about the organizational culture of openness to new ideas and innovations:

> The Managing Director would have been concerned but he didn't show it. Probably I sold it well. I suppose it (i.e., the organization) was welcoming new ideas.

The third factor is the opportunity for experimentation with the solution. Providing an opportunity for experimentation is a critical factor that will enhance the attractiveness of the solution. It provides an opportunity for the 'initiator' to test their solution, refine and iron out issues, and increase the probability of success in the wider implementation. This has been recognized as critical in developing a learning organization (Dibella & Nevis, 1998; Watkins & Marsick, 1996). The individual cases show a consistent behavior of the 'initiator' in looking for opportunities to experiment. For example, JS experimented with his independent student learning concept in a course where he was the convener:

> Well, it first came when I was teaching the core paper at level 2, which was a forerunner to the core level 1 paper. I thought….I recognized….that I had an opportunity now to take a particular module of that class…..which was reasonably analytic and therefore experiment with independent learning.

AF talked about experimentation with electronic data capture of cattle data, by cannibalizing existing time and resources:

> So we started…..whilst managing that project as well……so that was……what is referred to as skunk works…..an unapproved project that you get work done under the guise of something else.

The degree of intensity of the three factors can determine the duration of stay of the 'initiator' in the 'scripted' stage. When the three factors combine to make the change attractive, it can hasten the 'initiator's' move to the 'unscripted' stage. The 'unscripted' stage is where the enactment of the solution takes place. The word 'unscripted' is used to show the willingness of the 'initiator' to disengage from old scripted behavior. Success in experimentation will enhance the confidence of the 'initiator.' However, failure can cause the 'initiator' to regress and possibly go back to the drawing board. It is possible for an 'initiator' to regress several times before the solution succeeds in experimentation.

5.6   Contribution to Learning Organization

The refined framework illustrated in Figure 5.3, and the insights gained from the individual cases, provide practical avenues for nurturing creativity at the individual level in an organizational context. I would like to suggest four such avenues, with important practical implications for developing a learning organization: Nurturing the appropriate level of contradictions in the organization; nurturing and encouraging creativity in others; developing self containment in

individuals; and identifying, developing, and dispersing creative individuals in strategic areas of the organization.

Firstly, creativity is difficult to nurture in an organization without a sufficient level of contradictions, as shown in my framework in Figure 5.3. This means allowing certain types of information that contradict the current beliefs and assumptions, to filter across the hierarchies of the organization. This type of information, usually of strategic value (e.g., market activities), is traditionally viewed as the domain of top-level management, and tends to be treated as confidential. If such information only flows at the top level (Schultz, 2001), then that, over time, creates differences in mental models between hierarchies. Initiation of double-loop change is thus viewed, in this case, as the responsibility of top management, and any double-loop initiation creates friction between the hierarchies. The use of language, such as metaphors, irony, and paradox in organizational communication, offers another avenue for inducing contradictions. It can induce individuals to question conventional beliefs and assumptions of the organization (Oswick et al., 2002). Effective management includes knowing the productive level of contradictions to nurture in the organization. Too few contradictions will not ferment creativity; too many may de-stabilize and paralyze an organization. Maintaining the right balance is more an art than an exact science. Rahim (1995) describes this right balance as "moderate amount of conflict" (p. 7), and considers it as a necessary requirement of a learning organization which is capable of double-loop change. The term 'conflict' is used to describe incompatible values, goals, preferences, and activities. These must reach a certain level of intensity before it can be recognized by the individual as a conflict (Rahim, 2002). Such moderate amount of conflict has a positive effect on

individuals, and is similar to the concept of contradiction that I have used in this chapter. Although little emphasized in learning organizations today, these should form important aspects of management development.

Secondly, organizational factors came up consistently as important factors enabling 'initiators' to express their double-loop solution. Creating a psychologically safe environment, and providing a safety net for experimentation, are well established learning organization factors (Argyris & Schön, 1996; Dibella & Nevis, 1998; Schein, 1993; Watkins & Marsick, 1996). However, support from colleagues is little emphasized in the learning organization literature. The support was seen, in the individual cases, not only in the willingness of colleagues to engage in the double-loop change, but to affirm and encourage the creative ability of the 'initiator.' This affirmation and encouragement of one another's creativity was seen as important fuel for further creative engagement by the 'initiator' (Farmer et al., 2003). As a consequence I perceive that this should also form an important part of management development, and should be a constant practice of a learning organization. That is to say, not only developing one's own creative ability, but also nurturing and encouraging creativity in one's colleagues.

Thirdly, developing self containment in an individual serves to nurture double-loop change in organizations. Self containment is an important internal driver for the 'initiator' to be actively involved in the enactment of the double-loop solution. Self contained individuals are more likely to be intrinsically motivated to be creative. This means to develop their self confidence, viewing themselves as creative, contributing, and valued individuals. An organization can improve self containment by improving the individual's sense of self worth, perhaps by explicit

expression of their value to the organization and marketability in the wider industry. This means investment in the development of skills that may not necessarily be of value to the organization in the short to medium term, but may have longer term implications. I argue this to be a useful investment, as the development of self containment nurtures the willingness to enact the double-loop solutions, from which the organization can benefit, if they conscientiously act upon them.

Fourthly, and most importantly, creativity is seen to be an individual characteristic. This study affirms the quantitative research done by Feist (1998) showing that creative individuals have a strong link to certain personality traits. Feist (1998) argues that certain personality traits determine the temperament of individuals, which in turn determines their social disposition, cognition, and drive and motivation. These three factors (i.e., social disposition, cognition, and drive and motivation) directly influence creative behavior. Creative individuals are thus risk takers, self confident, have a preference for change, and are able to view situations paradoxically. Any organization has such individuals, but in some instances they go unrecognized and under-developed. It is critical to identify, develop, and disperse such individuals in strategic areas of the organization. Of particular importance is to have such individuals in middle level management. Middle management is constantly exposed to the tension between senior management strategy and operational level realities (Nonaka & Takeuchi, 1995). Such tension can potentially result in creative insight, and when combined with the right context, can unleash a powerful creative force. Practical suggestions like involving such individuals in 'opportunity finding teams,' providing them with necessary resources, and an environment where creative insights can be nurtured

and enacted, have important implications for the learning organization. Such teams must be immersed in the critical problems of the organization for a period of time, and then dissociated from the specifics of the problems so that new insights can emerge (Charbit & Kiefer, 2004). Such dissociations can be in the form of retreats or off site meetings, where team members are disengaged from their usual work surroundings.

5.7   Conclusion

This chapter explores, at a greater depth, the individual level factors that impinge on double-loop learning. It aims to contribute to new knowledge, especially in understanding the creative stages of an 'initiator,' and the interactions of the epistemological and the ontological level factors in the creative process. I would like to outline three areas where fruitful further research could be carried out. Firstly, the refined framework illustrated in Figure 5.3 shows that an individual transit through four stages in a book-keeping model creative process. The case studies also reveal that there are two primary dimensions affecting this transition: the emotional and the cognitive. The influence of these two dimensions, in the creative process, is conceptualized and illustrated in Figure 5.4 below.
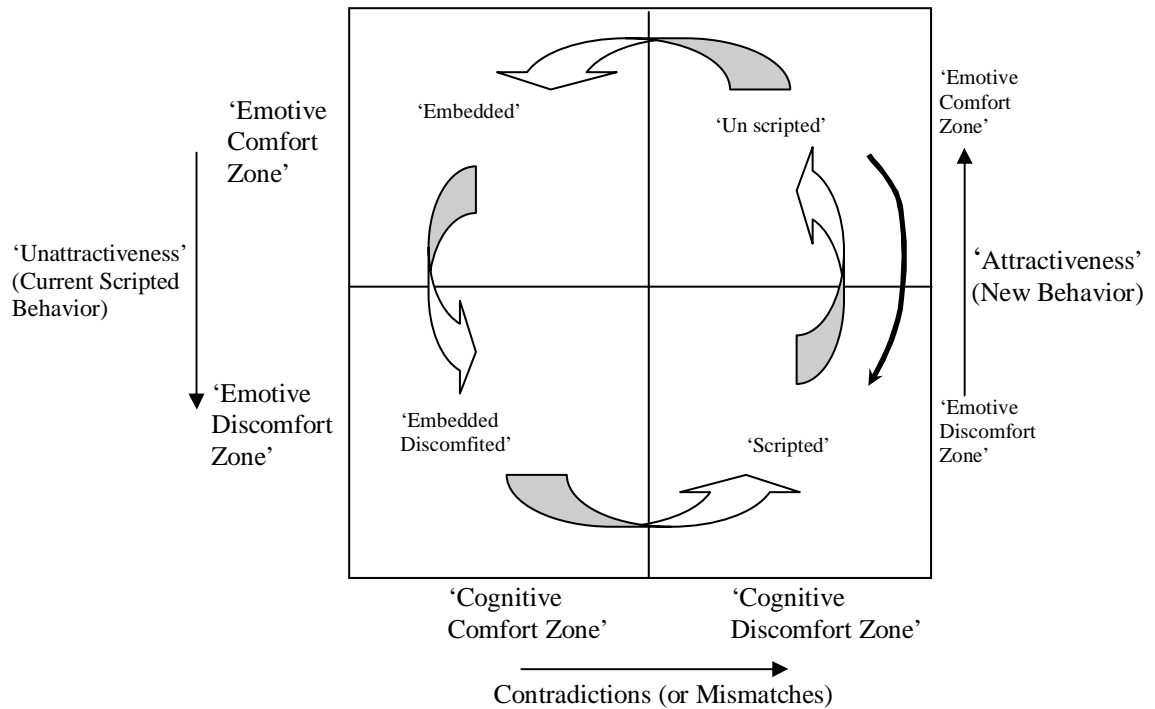
Figure 5.4 – The Influence of Emotions and Cognition on the Creative Process

I will describe Figure 5.4 beginning at the 'embedded' stage and moving anti-clockwise. These terminologies were explained earlier, but a revisit of them is necessary. When the individual is in an 'embedded' stage, he or she is emotionally and cognitively comfortable with the current scripted behavior. However, when contradictions arise in the organization, the current scripted behavior can lose its attractiveness, driving the individual to an emotionally discomforting stage ('embedded discomfited' stage). With continuing contradictions, the cognition can be driven to a discomfort zone (Oswick et al., 2002), where a frame breaking insight can occur. The individual still engages in the current scripted behavior, but is cognitively redefined ('scripted' stage). When there is organizational and management support for the double-loop solution, it becomes increasingly attractive, pushing the individual to an emotive comfort zone where an overt expression takes place ('unscripted' stage). The loop

closes with the possibility of the individual moving from an 'unscripted' stage to an 'embedded' stage. This is likely to happen when the double-loop change is successful, elevating the self-esteem of the individual. The new behavior thus becomes institutionalized and protected.

The transition model illustrated in Figure 5.4 can be further refined, and possibly a questionnaire instrument developed to measure the stages of individual transition. Such an instrument could be usefully applied in an organizational context (or even in group context), in order to measure creative potential.

Secondly, another opportunity for further research involves analyzing the dynamics of the interaction between 'recipients' and the 'initiator' of a double-loop change. 'Recipient' sense making of the double-loop change initiation influences the shared cognitive framework across the organization (Balogun & Johnson, 2004), and should have a reciprocal effect on the 'initiator.' This dynamic need to be further investigated.

Thirdly, further research can look at "fights" or "contentions" between cognitive frameworks, especially in the context of mergers and acquisitions. In such situations, the organization potentially has several social groups, with each social group bearing a distinct identity that influences their cognitive framework. Evolving a new identity, and hence a new shared understanding, with give and take between dominant cognitive frameworks, is a fascinating area of research.

A note of caution about this research study: I analyzed seven individual cases, both from profit and not-for-profit organizations, and from a variety of industries.

I was surprised that saturation was reached after five interviews. However, it may be necessary to further extend the number of individual cases, and possibly extend to a wider number of industry segments, before a firm conclusion is reached on the efficacy of the refined framework illustrated in Figure 5.3.

I would now like to move to the next stage of my research. Once a double-loop change has been initiated, primarily at the individual level, how can the organization effect a company wide change? This brings me to research question Q4: *"How does a new shared understanding for a double-loop change develop across the wider organization?"* The individuals in the organization, especially the influential stakeholders, must embrace a new shared understanding resulting from a new belief system brought about by the double-loop change. This will be the focus of Chapter 6.

CHAPTER 6

DEVELOPING A NEW SHARED UNDERSTANDING ACROSS THE ORGANIZATION

Q4: "How does a new shared understanding for a double-loop change develop across the organization?"

6.1 Introduction

In Chapter 5, I explored the individual level initiation of double-loop change and how individuals engaged the interfaces at the levels of learning. The case studies revealed that individuals go through four stages when initiating double-loop change: 'embedded,' 'embedded discomfited,' 'scripted,' and 'unscripted.' The individual level initiation of double-loop change is, however, the initial step. The question that now needs addressing is Q4: *"how does a new shared understanding for a double-loop change develop across the organization?"* This involves a socio psychological process of moving from interpretation to integration.

In the 4I model of Crossan et al. (1999), the process of interpretation explains the individual's intuition using language, moving from preverbal to verbal (Crossan et al., 1999). However, the process of integration, where a new shared understanding develops across the organization, is little understood. Crossan et al.

(1999) theorized the process of integration as the taking of coordinated action through mutual adjustment. If the coordinated actions are continuous and significant, then the process of integration takes place. Crossan and Berdrow (2003) empirically tested the 4I model with an in-depth case-based investigation of the Canadian Post Corporation. However, this empirical investigation confirmed the uncertainty of the integration process, and a more detailed understanding of the process has still to be developed. This chapter contributes to existing knowledge by creating an understanding of the process of developing a new shared understanding, through a case-based investigation. For this, I will employ and refine an existing theorized model (i.e., Fiol, 2002), and then discuss its contribution to the learning organization in the following order: section 6.2 provides a more detailed elaboration of shared understanding; section 6.3 discusses some theoretical perspectives that underpin the development of a new shared understanding; section 6.4 outlines the research methodology used; section 6.5 discusses the results of the case study investigation; section 6.6 summarizes, give key implications for management, and some limitations of this research; and, finally, section 6.7 summarizes the contribution to learning organization.

6.2 What is Shared Understanding?

It is important that we understand what is meant by shared understanding. Borrowing from the work of Laughlin (1991), an organization is said to consist of 3 elements ranging from the abstract to more tangible: 'interpretive schemes,' 'design archetype,' and 'sub-systems.'

'Interpretive scheme': At the abstract level, an interpretive scheme which is said to be the underlying beliefs and assumptions (Bartunek, 1993; 1994; Laughlin, 1991; Tyrrall & Parker, 2005) exists. The interpretive scheme is held by organizational members, and can vary from being held in a fragmented manner, to being differentiated, to being more pervasive (Tyrrall & Parker, 2005). The interpretive scheme is therefore the shared understanding amongst organizational members, and, although it is difficult to articulate, it is nested within the mission and purpose of the organization, and defines the cognitive framework of the organization members, especially that of the dominant coalition (Laughlin, 1991). In order to avoid confusion with terminologies, I will hence forth use the term 'shared understanding' to mean 'interpretive scheme.'

'Design archetype': The shared understanding, especially amongst the dominant coalition, can escalate to the external world and define the control systems, processes, and organizational structures (Rousseau, 1998). These (i.e., the control systems, processes, and organizational structures), are defined by Laughlin (1991) as the design archetype element.

'Sub-systems': In the longer term, the design archetype element provides legitimacy to the shared understanding of the organization members, and dictates the type of human resource recruitment, and, financial and capital investment decisions. Laughlin (1991) defines them (i.e., human resource, financial, and capital investment) as the tangible sub-system element of an organization.

Since the shared understanding is usually legitimized by the design archetype element, the shared understanding becomes 'hopelessly intertwined' (Fiol, 2002, p.

650) with it. The process of a double-loop change of the shared understanding becomes difficult. It is therefore essential, for both theory and practice, that we understand, and untangle, this intertwining.

6.3 Theoretical Perspectives to Untangle the Intertwining

Laughlin (1991), extending the work of Greenwood and Hinings (1988) tracks of organizational change, suggests two models of double-loop change, which he refers to as morphogenetic change: colonization, and evolution. The colonization model focuses on the design archetype of the organization. When the organization receives a disturbance/jolt/or kick due to a discontinuous change in the external environment, the organization responds quickly by radically changing the design archetype. With continued and persistent changes to the design archetype, a new balance and adjustment is made to the shared understanding of the organization and the tangible sub-system element. For this to take effect, it requires the dominant coalition to be persistent with the changes to the design archetype, so that such changes are seen as top-down, and executed in a typical command and control fashion. Individuals are thus forced, to a large extent, to embrace the new shared understanding. Such a change is usually discontinuous and involves great organizational upheaval. The empirical investigation of cases by Crossan and Berdrow (2003), and Tyrrall and Parker (2005), are examples of the colonization model.

However, the evolution model is more closely aligned with the learning organization ideal (Senge, 1990). In the evolution model, as illustrated in Figure

6.1 below, an environmental disturbance leads to deliberate but major shifts in the shared understanding, resulting in a new shared understanding developing with radically different underlying beliefs and assumptions. The design archetype and the sub-system elements are then altered in accordance with the new shared understanding. Laughlin (1991) suggests that an evolutionary change creates less upheaval, requires free open discourse, takes longer, and needs general agreement amongst a significant number of individuals in the organization. However, empirical investigation of the evolution model is rather limited in the extant literature, and the detailed theorizing of the process is sparse.
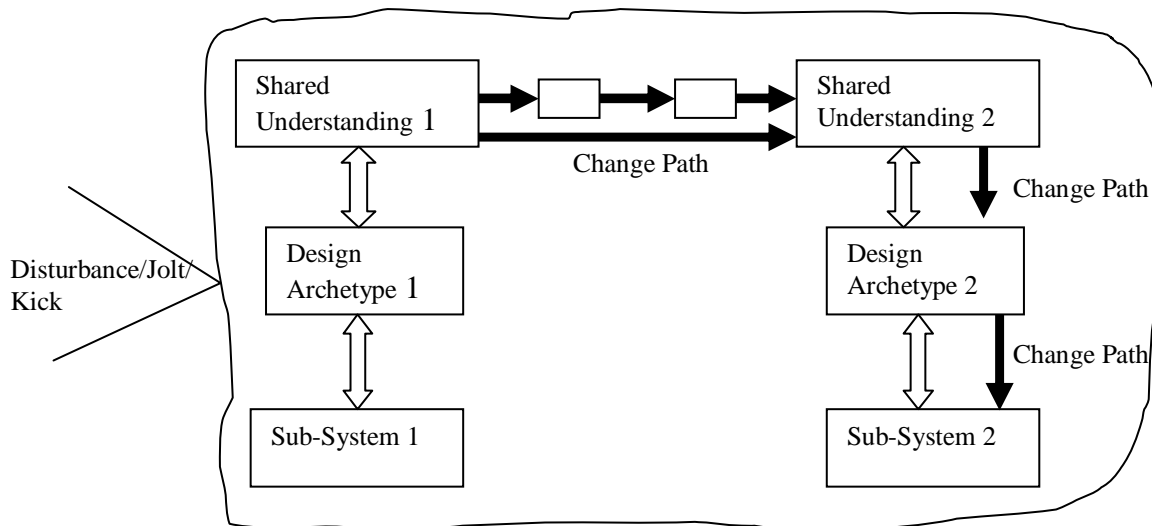
Figure 6.1 – The Evolution Model of Organizational Change (Adapted from

Laughlin, 1991)

My case study appears to align with the colonization model at the meta-level. However, as will be shown, the process of developing a new shared understanding at the detail level was more aligned to the evolution model where management sets the scene and approximates the direction, rather than directing through command and control.

The organizational identity theory is a useful theoretical perspective to better understand the process of developing a new shared understanding. Prior to fleshing out the details, it is important to discuss the relevance of Organizational Identity theory to the concept of shared understanding. It is my contention that the intertwining of the shared understanding with the design archetype element gives rise to organizational identities. When the intertwining occurs, certain attributes or characteristics of the organization emerge. These attributes become distinctive, central to the organization, and often have temporal endurance, thus giving rise to organizational identities (Albert & Whetten, 1985; Gioia, Schultz, & Corley, 2000). For example, if an organization has a shared understanding of being an equal opportunity employer, especially amongst minority races, certain systems and processes might be put in place to give voice and legitimize that shared understanding. Over time, the organization will tend to bear certain characteristics from this intertwining, giving rise to an organizational identity of being an employer sympathetic to minority groups.

Therefore, the organizational identity can be considered as the more tangible manifestation of the shared understanding. Let me state that the organizational identity is not identical to shared understanding, but a tangible manifestation of the intertwining of the shared understanding and the design archetype element. Since the organizational identity is a resource that can be managed and changed (Pratt & Foreman, 2000), Fiol (2002) suggests that a change in the organizational identity can have the desired effect of loosening the intertwining of the shared understanding with the design archetype element, and change it.

6.3.1 Fiol's (2002) model for identity transformation process

A recent model, theorized by Fiol (2002), employs an organizational identity perspective to develop a new shared understanding in an organization. It is an elaborate theoretical model that I intend to empirically test and further refine. The primary issue that Fiol's (2002) model tries to manage, in the context of a double-loop change of the organization, is the paradoxical tension that arises with high and low levels of individual identification with the organizational identity. Let me explain. When organizational members are able to express the attributes of the organizational identity, and if these continued expressions create distinctiveness in the organization, the self identity of the individuals becomes interwoven with the organizational identity (Dutton et al., 1994; Fiol, 2002). The individuals are thus said to be highly identified with the organizational identity (Fiol, 2002; Rousseau, 1998), and their self esteem becomes organizationally based (Pierce & Gardner, 2004).

This type of high identification has great utility value in trying to bind people together in order to respond to a common cause or threat. However, such high identification brings rigidity in a double-loop change. The loosening of such identification is required when it is necessary to alter the shared understanding. Attempting to do so affects the self identity of highly identified individuals, drawing strong ego defensive reactions (Brown & Starkey, 2000). Such paradoxical tension needs to be addressed in the process of a change in the shared understanding.

Fiol (2002) employs Lewin's (1951) model of unfreezing, moving, and re-freezing, at the meta-level, to build a model of organizational identity change and address the paradoxical tension. The unfreezing stage is Fiol's (2002) "De-identification" phase, the moving stage is the "Situated reidentification" phase, and the freezing stage is the "Identification with core ideology" phase. This is represented diagrammatically in Figure 6.2 below.

Organizational Identity Transformation

INTERPRETATION (Shared Understanding 1)	De-Identification Phase	Situated Reidentification Phase	Identification with Core Ideology	INTEGRATION (Shared Understanding 2)
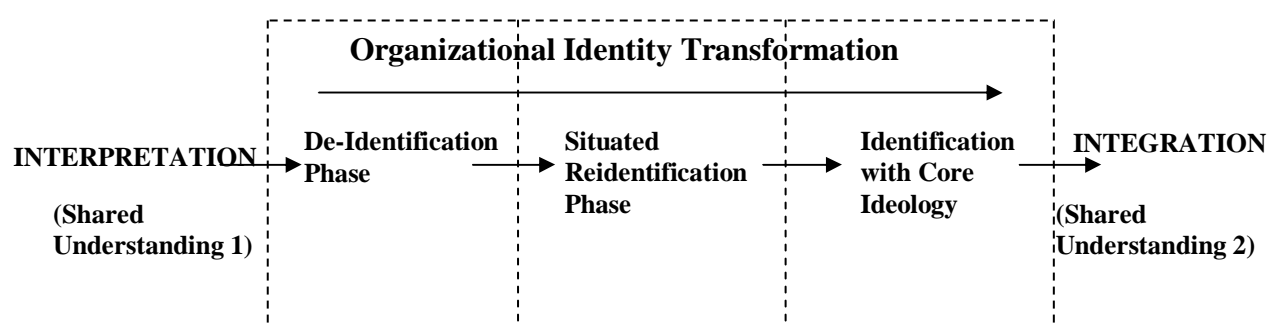
Figure 6.2 – Fiol's (2002) Identity Transformation Process

In the *de-identification phase*, focus is placed on loosening individual ties to the existing organizational identity (i.e., loosening the high identification of individuals). For this to occur there must be events that signal the failure of the existing organizational identity. A certain degree of pain and disequilibrium must be felt for the loosening to be effective. For example, organizational contradictions such as inefficiencies, or failure in some critical performance, or even glaring incompatibilities with other similar institutions (Seo & Creed, 2002), can drive an individual to a cognitive discomfort zone (Oswick et al., 2002). Although leadership cannot dictate the process of de-identification, they can set the stage by the use of appropriate language and behavior (Fiol, 2002). Individuals' high level of identification with the existing organizational identity,

which has been built on a foundation of trust, begins to deteriorate, resulting in escalation of mistrust in the organization (Fiol, 2002).

In the *situated re-identification phase*, the focus is on rebuilding trust-based relationships in the organization. In this phase, the focus is on creating a new understanding of oneself in the organizational context, and to restore some degree of equilibrium. It is important for leadership to create situations where active experimentations are possible around the new organizational identity (situated expressions). Such situated expressions must be ongoing and significant, so that individuals can begin to build a new self conception around the new organizational identity (Rousseau, 1998). In this phase, there is the invariable tension of regressing back to the old beliefs and assumptions. There is the possibility of old behavior not changing in spite of an endorsement of the new organizational identity. There will also be multiple experimentations occurring in the organization, bringing about a possible fragmentation of interpretive schemes. There exists, therefore, the need for greater coherence which can be brought about by instilling a new core ideology.

In the *identification with a core ideology phase*, the focus is not to build a new organizational identity, which can lose its utility value in the face of discontinuous changes in the external environment, but a core ideology that is broad and elastic enough to withstand continuous double-loop changes. Such a core ideology has been described as a "superordinate identity" (Hogg & Deborah, 2000, p. 151). Building a new organizational identity around tangible structures like products, market and market position, only serves to create identity rigidity in the future (Fiol, 2002).

6.3.2 Refinement to Fiol's (2002) model

Although Fiol's (2002) model is quite detailed in its description of the process of developing a new shared understanding (using the organizational identity perspective), it does little to recognize the existence of multiple identities within an organization. The focus of Fiol's (2002) model is on the more fundamental, or core identity, of the organization. The core identity can be described as the deep rooted belief regarding how the business should function (Davies, Chun, Da Silva, & Roper, 2003). The core identity is shaped over time through significant organizational events (Gioia et al., 2000), often lies latent and becomes conscious only when it is threatened in a radical fashion (Dutton et al., 1994; Glynn, 2000), and is held by significant number of individuals in the organization. The development of a new shared understanding is therefore a radical redefinition of this organizational core identity. However, the influence of multiple identities must also be considered. Although multiple identities may not necessarily be held by significant number of individuals in the organization, they can be distinguished by certain factors:

- They involve individuals' differing perception of what is central, continuing, and distinct in their organization (Pratt & Foreman, 2000). These multiple identities are formed to meet varying demands of stakeholders.

- They are more salient than the core identity and are likely to be affected by a variety of issues in the organization (Pratt & Foreman, 2000)

- They are more malleable (Davies et al., 2003) and hence can be more easily managed (Pratt & Foreman, 2000).

In a larger and a more complex organization (an assumption of this thesis), distinct social groups of individuals are likely to embrace certain multiple identities (Ashforth & Mael, 1989). Since multiple identities are more salient, and individuals are able to express its attributes in the day to day operations of the organization, their self identity is likely to be more associated with one or many of the multiple identities. These multiple identities would have varying degrees of association with one another (Pratt & Foreman, 2000) and with the core identity (Davies et al., 2003), making their consideration essential in a core identity transformation[8]. Therefore, given the previous discussion, the remainder of the chapter will attempt to:

- Empirically validate Fiol's (2002) theoretical model of core identity transformation process.
- Refine Fiol's (2002) model based on the results of the empirical investigation and by considering multiple identities.

6.4 Methodology Used

A single case-based methodology is used to empirically test and refine Fiol's (2002) model. Although this is arguably a major limitation of this research, and the findings are bound to be context specific, it nevertheless provides a suitable platform to view, in-depth, the intricacies of developing a new shared

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[8] Several researchers have argued that the core identity is stable and enduring (e.g., Albert & Whetten, 1985; Davies et al., 2003). However, this concept of an enduring and stable organizational identity has been recently challenged (Brown & Starkey, 2000; Gioia & Thomas, 1996; Meyer, Bartunek, & Lacey, 2002).

understanding by collating and analyzing the views of people who are able to recall the events accurately.

This approach of validating Fiol's (2002) model is not purely inductive. Although case based approaches are quite often used for inductive theory building with no preconceived theoretical biases, there are many examples of the approaches being used in a deductive manner to validate an existing theory (for an example see Crossan & Berdrow, 2003). In this investigation, I will use the three phases of Fiol's (2002) core identity transformation process (see Figure 6.2), use Identity theory perspective, and draw from Complexity theory, to guide my case study analysis. The explanation of the appropriate principles of Complexity theory will be presented at the point of use. The reason why Complexity theory is used is due to the nature of the process of developing a new shared understanding in this research context. The process was complex and non-linear, where the new shared understanding was evolved with management setting the scene, rather than dictating the process in a typical command and control fashion.

6.4.1 The organizational context

An opportunity opened up unexpectedly for me to study the outsourcing of CHH-Kinleith's maintenance function, from the perspective of the service provider ABB-Kinleith. This God given opportunity arose when Mr. Juergen Link, the site manager for ABB-Kinleith, requested that a learning history be developed for their outsourcing partnership with CHH-Kinleith. Mr. Juergen Link made contact with my PhD supervisor Dr. John Scott, through their mutual association with the Society of Organizational Learning (SOL).

Historical background

I will now describe, in brief, the historical events leading to the outsourcing. CHH-Kinleith is New Zealand's largest pulp and paper mill, based in a location named after the mill, near a thriving township called Tokoroa. Plant maintenance is a core function and directly affects the mill's productivity and cost structure.

CHH-Kinleith is owned by the publicly listed CHH Group, a major player in the New Zealand stock exchange with an annual turnover exceeding US$2.3 billion. International Paper (IP), a US based multinational pulp and paper organization, is a major shareholder of the CHH Group. The mill has a long history dating back to 1943. The original owner, New Zealand Forest Products (NZFP), employed over 4000 people, and the mill became the mainstay of the Tokoroa community (Healy, 1982). Due to escalating costs, NZFP went into debt and was eventually bought out by the CHH group in 1990 and the mill was renamed CHH-Kinleith. CHH group underwent a structural transformation in 2001, when its six business groups were split into thirty smaller independent businesses with CHH-Kinleith becoming one such independent business. During these changes CHH-Kinleith experienced several rounds of redundancies, trimming itself to about 650 employees today (inclusive of ABB-Kinleith employees).

CHH-Kinleith began collective wage negotiations with the engineers union in the year 2000. The engineers union represented the tradesmen of the maintenance function. Due to growing competition from cheaper mills in Asia, management wanted significant productivity improvements and to reduce the cost structure of the mill. However, the engineers union and management could not agree on the

productivity improvement measures. When the protracted negotiations abruptly ended in September 2001, the CEO was prompted to take the radical decision to outsource the maintenance function. Since the maintenance function is considered a core function of a paper mill, this outsourcing of a core capability is considered strategic (Gottfredson, Puryear, & Phillips, 2005) or transformational (Linder, 2004).

ABB, due to their global reach and their extensive maintenance experience in power industries and limited exposure to pulp and paper in Europe, was chosen as the service provider. Negotiations with ABB were conducted in secret, and on the 27th of March 2002 management announced their decision to outsource the maintenance function. The announcement came as a shock to all employees and ten months of uncertainty followed. The engineers union instigated an unsuccessful court action to stop the outsourcing to ABB. They attempted to discredit ABB by spreading stories of their financial crisis, their dramatic failures in previous outsourcing engagements, and their incompatible work ethics. These attempts to prevent the outsourcing failed, and on the 17th of January 2003, 350 employees of the maintenance function were made redundant. ABB took over responsibility of the maintenance function on the 20th of January 2003, employing about 140 ex CHH-Kinleith employees, which comprised almost 90% of their workforce. A separate unit named ABB-Kinleith was formed to execute the contract, however based in the same work environment as before. The five year rolling contract, renewed annually, ensured that ABB-Kinleith shared in the overall productivity of the mill and not only in the performance of the maintenance function.

The suitability of the research context

My investigation focuses only on the service provider ABB-Kinleith. At the meta-level, the research context is more aligned to the colonization model of Laughlin (1991). There is some degree of change to the design archetype element with the outsourcing. However, I'm of the view, after in-depth investigation of ABB-Kinleith, that the detail process taken to develop a new shared understanding is more evolutionary with Fiol's (2002) model having direct applicability. The primary reason for this is the perception of ABB-Kinleith employees that nothing has really changed. Firstly, the majority (over 90%) of the employees of ABB-Kinleith are ex-CHH-Kinleith employees, having an average service period per employee of 22 years. A large majority of these employees had previous generations (father or uncle) who had, or are still, working in the mill. They have experienced previous ownership changes and several rounds of redundancies, and their allegiance and loyalty is to the mill and not to the owners of the business. The owners of the business are treated as agents rather than principals (Rousseau, 1998).

> It doesn't matter who owns it, it is part of the town and part of my life…..yeah. When we were made redundant, we didn't know if ABB was coming or who was coming, the mill had to survive you know. ABB came on the 20th of January 2003. Two days before on the 18th, they said to us we need a crew to start up at mid night that was when ABB took over. I turned up and a couple of others turned up and the mill had to keep going, it doesn't matter what was happening around the place, the mill had to keep going (Tradesman)

Secondly, to these employees of ABB-Kinleith, nothing changed. The control systems, processes, and procedures had not changed. Although the outsourcing,

significantly altered the number of employees, the overall organizational structure remained intact with only few key individuals from ABB in senior management positions (the site manager, the central services manager, the financial controller, the human resources manager, and the sourcing manager were from ABB). To the former employees of CHH-Kinleith, it was simply a change in the color of their overalls.

> Well, they employed me for a start…… nothing much has changed for me except the color of my overalls. I haven't noticed many different procedures. They bring me the job and I do it. …..nothing's changed (Tradesman).

Therefore it can be argued, from the employees' point of view, the design archetype underwent no significant change with the outsourcing. What was in place remained virtually the same. Due to the peculiar nature of the organizational context, the mode of change in the shared understanding, at the detail level, is more evolutionary. This case study is therefore appropriate to understand the process of developing a new shared understanding.

Although I argue the suitability of the organizational context for this research, there is a major limitation that the reader should note, prior to the more detailed discussion that is to follow. The research period covers the start of the outsourcing contract (i.e., January 2003) to the end of the data collection process (i.e., October 2004). This period is rather limited, considering that a change in shared understanding usually takes a long period of time (Laughlin, 1991). Therefore, as stated earlier, this research should only be considered as revelatory,

as it seeks to reveal the ongoing processes in the development of a new shared understanding.

This process of developing a new shared understanding must consider the various distinct social groups carried over from CHH-Kinleith. They had to develop a new shared understanding of being a customer orientated service provider, along with a new core ideology. This new shared understanding is double-loop, since, in the past, they considered themselves as owners of the mill. In this study, I focus on the impact of management actions and behavior on the process of developing this new shared understanding.

6.4.2 Back ground to conducting the case study

Dr. John Scott and I met with the site manager of ABB-Kinleith in the month of April 2004, to work out their expectations of the learning history. The primary research question guiding the case study was *"How does a new core identity of a customer orientated service provider emerge for ABB-Kinleith?"* This requires a new shared understanding to be developed within ABB-Kinleith. This case study therefore offers an opportunity to empirically validate and refine Fiol's (2002) theoretical model.

I then met with the management team to list potential candidates for the interviews. Thirty candidates were listed, including some supportive of, and some critical of, ABB-Kinleith. The site manager and I met with the candidates and briefed them about the objective of the study. I gave the candidates the option of opting out of the interview process but none did so.

Prior to the interviews, I gathered background information by reading all relevant press reports from April 2002 to December 2002. I had extensive discussions with a consultant involved with ABB-Kinleith during the setting up stage of the contract. I also attended a business presentation in Auckland where the Mill manager of CHH-Kinleith shared his experience on the outsourcing.

I summarized this background information, and articulated and documented my own interpretation. I created four separate folders, one for historical background leading to the outsourcing, and three folders for each of the core identity transformation phases suggested by Fiol (2002): the de-identification phase, the situated re-identification phase, and the identification with a core ideology phase. Where appropriate, I placed my summary and interpretation in each of the separate folders. The procedure I followed in analyzing the qualitative data resembles the general analytical procedure suggested by Miles and Huberman (1994). I made no effort to quantify the qualitative data and allowed my own interpretation of the qualitative data to reach saturation (Collis & Hussey, 2003). The primary reason for me to choose this method is the disparate and large volume of information gathered. The analysis was influenced by my own interpretation of events, making a quantitative approach impractical.

The background information guided the type of questions asked in the interview process. I did four to five interviews a week, followed by three weeks of coding and analysis. All the interviews were digitally tape recorded, transcribed verbatim, and then given back to the interviewees for their comments and feedback. When I visited the site to conduct the interviews, I took the opportunity of making field observations, attending meetings, and informally interacting with the employees.

I wrote ideas and documented my thought processes as the interviews and field observation proceeded (Miles & Huberman, 1994).

It is this process of ongoing documentation that aided the entire coding and theme generation process. I listened to the recorded interviews several times, and then began to code the incidents and place them in the relevant core identity transformation phases (in separate folders). I then generated themes by categorizing these incidents. My interpretation of the themes was largely influenced by the Identity and Complexity theory perspectives, and by the ongoing documentation. Using insights from the coding and analysis process, questions were refined or further questions added, for the next round of interviews followed by further coding and analysis. Through this iterative interview and analysis process, I interviewed 21 of the 30 employees initially selected. Although saturation was reached after 17 interviews, with no new incidents and themes generated, I continued to interview 4 more employees. Of the 21 interviewed, 11 were tradesmen, 6 were middle management, and 4 belonged to the management team. The interview process started in July 2004 and concluded in the month of October 2004.

Miles and Huberman (1994) suggest two types of reliability tests to be done on qualitative coding: intra-coder reliability and inter-rater reliability. In the intra-coder reliability check, the coder performs, from scratch, the same coding process after a length of time, in order to see if any new codes arise. Due to the iterative nature of my coding process, I found the intra-coder reliability check unnecessary. However, I did the inter-rater reliability check. I employed two independent co-analysts (post graduate students from the Waikato Management School). I gave a

detailed briefing to the independent co-analysts regarding the purpose of the research, and the theoretical perspectives guiding the research. Each co-analyst then analyzed a sample of four interviews each (a total of 8 interview transcripts out of 21). I then computed the inter-rater reliability of their coding by dividing the number of coding agreements with my coding with the total number of codes generated by the co-analysts (Miles & Huberman, 1994). The inter-rater reliabilities of the coding, across all three phases, were 83% and 82%. I examined the codes generated by the co-analysts in detail, and the necessary refinement to the codes was done. Figure 6.3 illustrates the process I followed in conducting the case study. Table 6.0 shows the codes, and the categorization of these codes into the relevant themes, across the three core identity transformation phases.
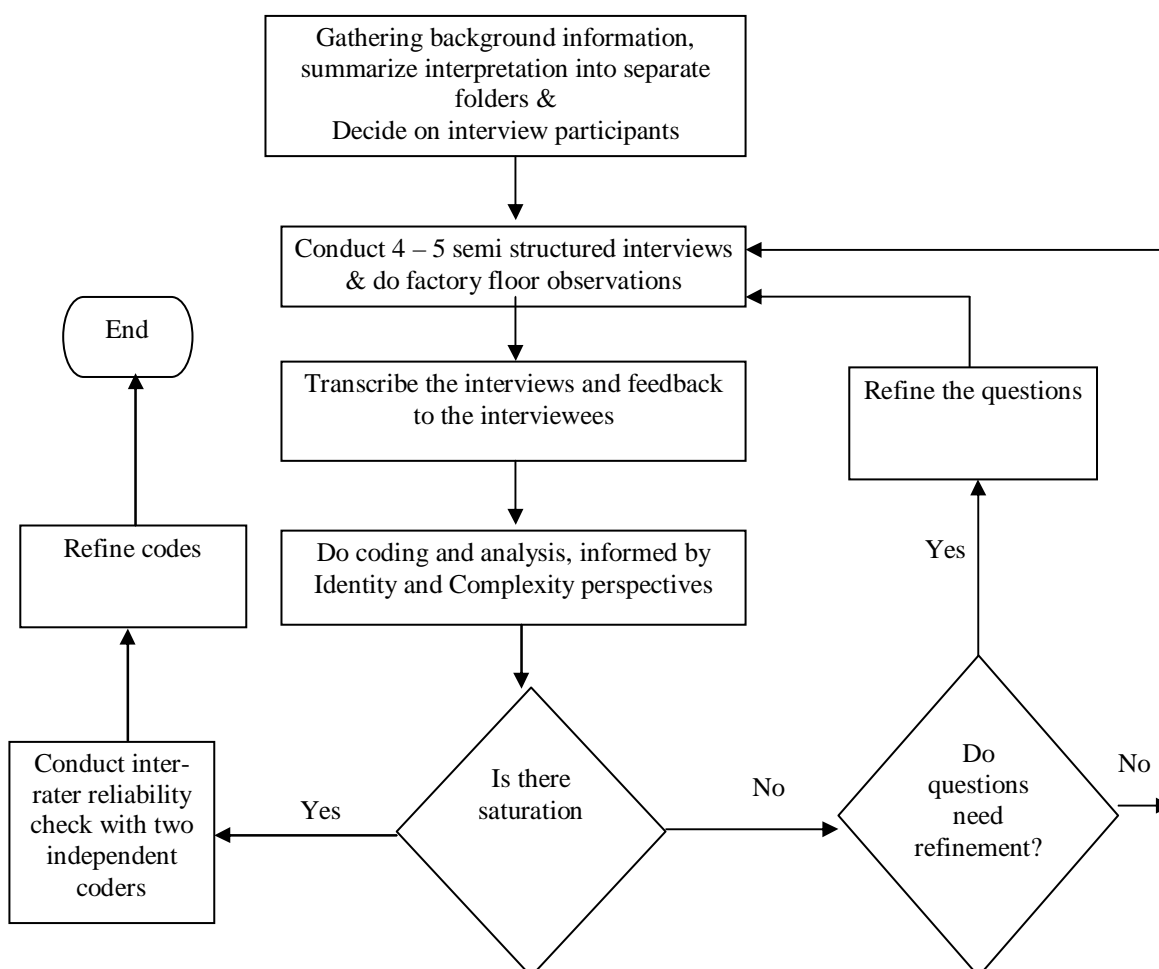
Figure 6.3 – An Overview of the Case Study Process

Table 6.0 – Generated Themes

Core Identity Transformation Phases	Generated Codes	Categorization of Codes	Generated Themes
De-Identification Phase	▪ Work setting ▪ Mental model ▪ Social norms	Deep social structure	Inertia at the "edge of chaos"
	▪ Rupture of trust by union behavior during restructuring ▪ Credibility depleting action ▪ Trust depleting behavior	Feedback loops reinforcing deep social structure	
	▪ Vulnerability	Vulnerability	Vulnerability
	▪ Sharp departure from social norm	Sharp departure from social norm	Destabilization of sensitive initial condition
Situated Re-Identification Phase	▪ Joint vision creation to articulate core identity attributes ▪ Embracing multiple identities in the vision	Embracing multiple identities in the new core identity	Tangible articulation of the new core ideology
	▪ Active experimentation	Situated expressions	
	▪ Vision ownership	'Stickiness' of vision	
Transition Phase	▪ Work load ▪ Dependency ▪ Reach of management-ABB ▪ Empathizing with valued identity ▪ Open organizational climate ▪ Middle management frustration ▪ Loss of credibility due to management-ABB actions	Coupling of distinct social groups	Maintaining momentum towards identification with core ideology
	▪ Leadership training ▪ Information sharing ▪ Protection of valued identity ▪ Management-ABB direction ▪ Developing business acumen ▪ Participatory decision making ▪ Common identification with ABB	Synergy between the social groups' multiple identities	
Identification with Core Ideology Phase			

An initial 60 page report was prepared for ABB-Kinleith, detailing the key learnings from their process of evolving a new core identity. Although the process is by no means complete, and a new shared understanding is still to be established, there were some key lessons, which helped them refine their current processes and provided valuable lessons for their future outsourcing engagements.

The report was first presented to the management team on Monday the 20th of December 2004, in a four hour meeting. This was then followed by a two day workshop (on the 26th and 27th January 2005) for a selected group of 20 individuals (across all hierarchies). The content of the learning history report was analyzed and there was agreement regarding its validity. This was then followed by a presentation to the entire workforce of ABB-Kinleith on the 3rd of February 2005. In both the presentations and workshop, there was general agreement regarding its accuracy and validity.

Therefore, in conducting this qualitative research, I ensured that I followed the four suggested interrelated elements of Lindlof (1995): process, reduction in data, explanation, and theory. In the process element, as explained earlier, the analysis of data happened at a very early stage. The formulated thoughts were then compared with new data and refined accordingly. In the reduction element, I categorized and coded data according to the relevant phases of core identity transformation, and created a conceptual structure, which formed the basis of refinement of Fiol's (2002) model. In the analysis and theory elements, I explain the process of a new core identity emergence, which enabled me to understand the process of a new shared understanding evolving. In the section 6.5 to follow, I present the results of this case study.

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6.5 Results of the Case Study Investigation

As explained in section 6.4, the analysis evolved with the iterative coding and data gathering process. As the data gathering and iterative coding process progressed and patterns emerged, I observed three distinct social groups in ABB-Kinleith: tradesmen who were ex CHH-Kinleith employees, the former middle management of CHH-Kinleith, and the management team from ABB (I will refer to them as "tradesmen," "middle mngt-ex-CHH," and "management-ABB" respectively). These distinct social groups held multiple identities, many of which were carried over from CHH-Kinleith days. It was therefore necessary for me to identify these multiple identities, and analyze how they impact the emergence of a new core identity. In order to do so I constructed additional interview questions in order to elicit these multiple identities, for example, "What are the key characteristics of the work place that appeal to you the most?" and "What keeps you here at the mill?" I then collated the responses and looked for common attributes within each of the distinct social groups. I gauged the strength of an individual's identification with these common attributes by judging the use of language in describing them (see Appendix 7 for an excerpt from an interview). This revealed those multiple identities that were highly identified by the social groups. The multiple identities held by tradesmen and middle mngt-ex-CHH had a previous history in CHH-Kinleith and had been carried over to ABB-Kinleith. The tradesmen express such identities as: "we are a collective and we are represented by the engineers union," and "the Kinleith mill is what we value" (the mill is referred to as "Kinleith mill" by those employed on the site). Middle mngt-ex-CHH express identity as "Kinleith mill provides scope and variety of

work to exercise my technical skills," and the management-ABB express their identity as "we are part of the prestigious ABB global operation." Table 6.1 below summarizes these multiple identities.

Table 6.1 - Summary of Multiple Identities of Distinct Social Groups

Distinct Social Groups	The Multiple Identities Embraced	Examples of Comments Showing Level of Identification
Tradesmen	"Kinleith mill is what we value" "We value being a collective. We are represented by the engineers union"	*Yeah there was a good feeling in that we actually owned Kinleith mill. CHH or whoever, NZFP going way back in history, they didn't own Kinleith mill, we did. Because we run it and it's quite an emotional thing for people* (Tradesman). *Yeah, we prefer to be a collective* (Tradesman).
Middle mngt-ex-CHH	"The Kinleith mill provides us scope and variety of work where we can exercise our technical skills"	*The things that kept me here was the variety of engineering type of work, the scope of the work, the ability of following things through in depth, was always quite attractive part of the place. I think from a project and work point of view it was quite highly regarded. People, consultants who came here and worked for us always seem to enjoy the work here, enjoy the challenges, and the scope of the project* (Middle mngt-ex-CHH).
Management-ABB	"We are part of the prestigious global operation"	*We are ABB, and we should be proud of that and should adopt what ABB around the world adopts and not go and generate our own just to try and get people to fit in* (Management-ABB).

In order to place major events into their time perspective, I divided the duration into three time periods: the first period, from January 2003 to July 2003, was a particularly tumultuous period; the second period, from August 2003 to December 2003, was when most of the management interventions took place; and the third period was from January 2004 till the conclusion of the data collection. Figure 6.4 shows the key events in the relevant time periods.

First Period (Jan'03 – Jul'03)	**Second Period (Aug'03 – Dec'03)**	**Third Period (Jan'04 – Oct'04)**
Tradesmen placed on a 3 months probationary individual contract	Forest camps held to co-create the organizational vision (Aug 2003)	Collective wage agreement signed with the engineers union in Mar 2004
Leadership training for middle mngt-ex-CHH in Feb 2003	Formation of the Path Finder team (Sep 2003)	Construction of a dirt track for mountain biking
Strike by the production workers of CHH-Kinleith (Mar 2003 – May 2003)	Formation of the Future Leaders' team (Sep 2003)	
	Negotiation of a collective wage agreement with trade unions (started Oct 2003)	
	Christmas party for worker's families (Dec 2003)	

Figure 6.4 – Key Events in the Relevant Time Periods

Let me now explain the process of core identity emergence, which is an empirical validation of, and a refinement to, Fiol's (2002) model after considering the existing multiple identities of the distinct social groups. This refined model is illustrated in Figure 6.5 below, and shows the detailed processes in each of the core identity transformation phases.
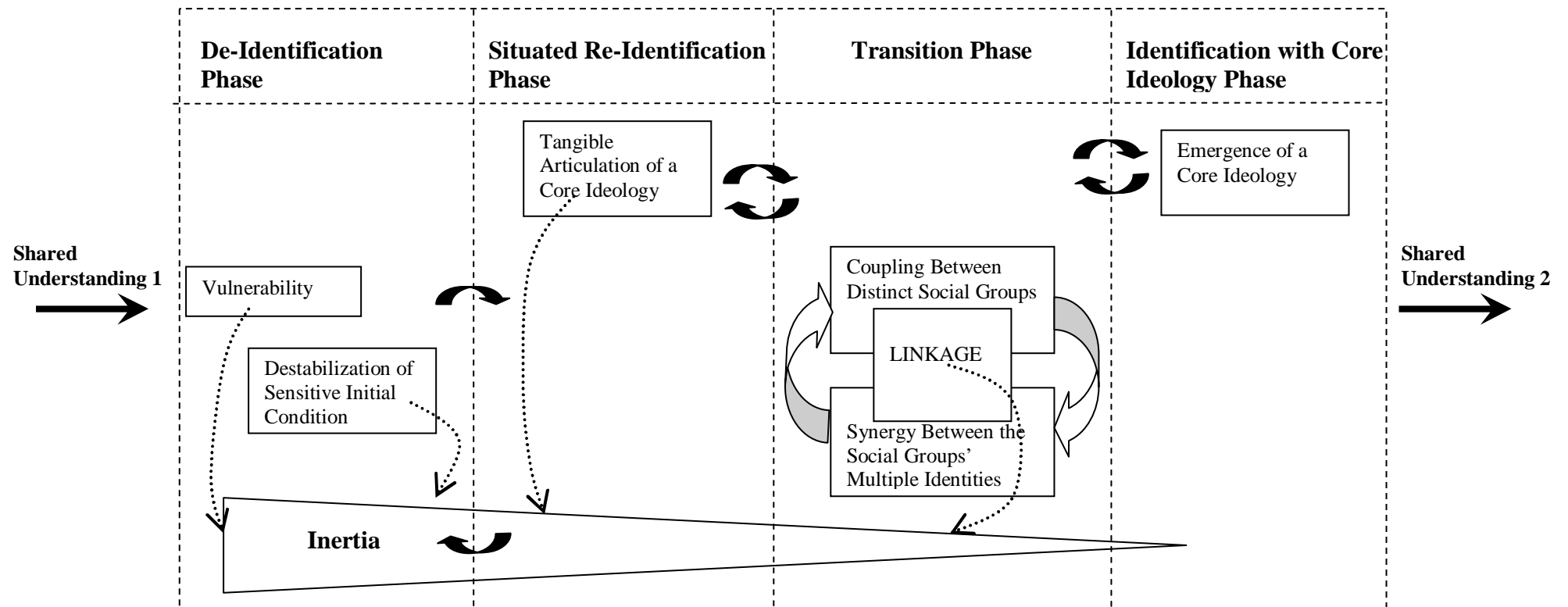
Figure 6.5 – Refined Model of Core Identity Transformation Process

6.5.1 The processes involved in the de-identification phase

In the detailed analysis of the phases of core identity transformation, I was influenced by Complexity theory[9]. An organization, with its interrelated and dynamic interacting systems, is constantly subjected to change due to the discontinuity of the external environment. This is why an organization can be viewed as a complex system, where the principles of Complexity theory can be usefully applied (MacIntosh & MacLean, 1999).

A complex system, such as an organization, can be viewed as stable, or in an equilibrium position when it is not affected by external disturbances. However, a major disturbance can drive such a system to a far from equilibrium position. Instead of descending into chaos, it can move to a zone referred to as the edge of chaos (MacIntosh & MacLean, 1999; McElroy, 2000; Pascale et al., 2000). It is at the edge of chaos that a double-loop change within the organization is possible. At the edge of chaos the complex system is more open to the external environment, exporting entropy[10] and importing energy. As such, the system begins to self organize to a new form (in this instance a new core identity) through the operation of simple order-generating rules. The outsourcing of CHH-Kinleith to ABB, resulting in significant redundancies, was a major disturbance, placing ABB-Kinleith at the edge of chaos. At this edge of chaos the previous core identity of being a pulp and paper mill business, to the majority of the employees, was significantly loosened.

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[9] For a more detailed elaboration of the Complexity theory principles, see section 5.3 of Chapter 5.
[10] The word entropy comes from non equilibrium thermodynamics from the work of Progogine and Stengers (1984). Heat is considered as the most entropic form of energy and is a measure of disorder for a non equilibrium thermodynamic system.

However, when a complex system is at the edge of chaos, a bifurcation is possible (MacIntosh & MacLean, 1999; Pascale et al., 2000). The system can either regress to the earlier equilibrium state, or some "symmetry-breaking events" (MacIntosh & MacLean, 1999, p. 303) would irreversibly break down its existing structures and propel its self organization to a new form (i.e., a new core identity) through the operation of a few simple order-generating rules. It is this tension at the edge of chaos that was seen in the initial stages of ABB-Kinleith.

How can such a tension be effectively managed? The principles of Complexity Theory tell us that at the edge of chaos there must be continued vulnerability, and that sensitive initial conditions must be destabilized for the self organization to take place (Pascale et al., 2000). This happens through non-linear feedback loops. Certain events and actions can act as feedback loops. When the feedback loop destabilizes the sensitive initial conditions, the self organization is positively influenced. However, when the feedback loop de-sensitizes or re-enforces the initial conditions, it promotes regression to the earlier equilibrium state.

Destabilization of sensitive initial condition

What formed the sensitive initial conditions of ABB-Kinleith? To answer this, I refer to the concept of deep structures proposed by MacIntosh and MacLean (1999). According to MacIntosh and MacLean (1999), a deep structure is considered to be an invisible structure which forms the basis for self referencing. They consider the deep structure to be the paradigm of individuals legitimized by the design archetype elements. It is these design archetype elements that are

surfaced and reframed in the process of self organization, making their suggestion akin to the colonization model of Laughlin (1991).

However, I differ by referring to deep structures as the more abstract deep social structure of ABB-Kinleith. The deep social structure consists of two components: the internal world that defines the perception of accepted behavioral norms of individuals, and the external institutionalized social world (i.e., the norms of social behavior), which gives legitimacy to the internal world of the individual. Since the process of de-identification of an existing core identity breaks down trust between individuals of the distinct social groups, individuals personalize (Kramer, 1994), and read too much (Pruitt, 1987) into the actions of others, especially that of management-ABB. The deep social structure therefore becomes more salient and more pertinent than the more tangible design archetype element of the organization. This is what impacted heavily on the initial conditions for ABB-Kinleith.

Since the outsourcing at Kinleith was a "close" type, the employees continued to work in the same environment. The work place arrangement, the work practices, the technology used, and the social factors remained the same, perpetuating the old behavior (Porras & Robertson, 1992). As one tradesman put it:

> It was basically just the name change. What was in place was virtually kept the same. Except for the redundancies there were no real changes in the actual job description I was doing. So I didn't notice any changes at all, except the color of my overalls.

Therefore, ABB-Kinleith inherited the deep social structures that existed in the CHH-Kinleith days. The internal world, especially of the tradesmen, who formed the majority, was a mental model of distrust towards management. This internal world was legitimized by an external social norm of open vilification of management, and resistance to their suggestions. This is reflected in the words of a manager-ABB:

> I keep thinking, why are these people so tough on me? Not only my in department, but right around the site. I mean I walk into a meeting and I walk out, I'm a non-emotional person, I get very passionate but I'm not emotional. And I walked out of this one meeting and this person had just basically chewed me up and spat me out, and someone asked me how I was and I burst into tears and I never done that in my life, you know. That's how horrible it was and I kept thinking what was I doing wrong? Everything I did they questioned or they rubbished it, and it was really hard to understand.

Unfortunately, some management-ABB actions, at the initial stage, acted as feedback loops to reinforce this deep social structure. For example, the tradesmen were taken on a three month probationary individual contract (see Figure 6.4), which destabilized their valued multiple identity of being a collective. This destabilization resulted in mistrust (Fiol, 2002). The tradesmen thought that management-ABB was colluding with CHH-Kinleith to weaken the engineers union:

> Well, I think they were under instruction from CHH-Kinleith; this is my opinion, under instruction from CHH-Kinleith not to deal with the unions directly and to try to get the people on individual contracts which didn't go down well. I think and hopefully they have learnt with it that they should have got involved with the unions earlier and struck a deal rather than create

all that uncertainty and animosity and it took quite a few months for things to settle down after they did take over.

Another example is the expectation from the outsourcing contract. ABB was expected to bring in world class systems from their experience in other industries worldwide. However, such world class systems never materialized and were seen as marketing gimmicks, reinforcing the mental model of distrust towards management. In the words of one middle mngt-ex-CHH:

> Again in day one, I got the whole team together and said, "This is a new organization, we are all bits and pieces from everywhere, right we are all one now, this is the track we are going down, it's going to be rough and bumpy, but stick with us. These are the types of ways we want to do maintenance, and these are the systems that will be coming into place to support this." Well I look back, I still got notes I made for that day, and I don't know whether to laugh or cry because those things didn't eventuate. You know the things I said I could deliver to those guys I couldn't, because the systems weren't there and we had to build them here.

As a result, these actions resulted in feedback loops that reinforced and de-sensitized the unsustainable deep social structure, and hindered the momentum towards self-organizing to a new core identity. There was momentum to regress, observed in the first few months of the outsourcing contract.

I now describe how this inertia was overcome and how the self organizing momentum towards a new form started. Ironically, the amplifying of feedback loops that destabilized the initial conditions happened through an unforeseen situation, which stalled and postponed the rational plan of creating an organizational vision at the initial stage of the contract. The production workers

of CHH-Kinleith went on a three month strike on the 6th of March 2003 (see Figure 6.4). Important feedback loops, resulting from this unforeseen strike, were sharp departures from taken-for-granted social behaviors. One was when the tradesmen, who were on individual contracts, did not join their production colleagues in the strike. During the strike period ABB-Kinleith executed a shut down maintenance, which enabled tradesmen and middle mngt-ex-CHH to identify with ABB-Kinleith while their former production colleagues were picketing outside. Another was when management-ABB reached down the hierarchy to the tradesmen level. They met all the employees on a weekly basis and openly discussed what was happening with the strike. They made themselves more visible on the shop floor, and openly acknowledged that the promised world class system would not materialize. Management-ABB was not afraid to display vulnerability and open communication at all levels. These management actions represented a sharp deviation from the previous social norms. Aligned with continuing vulnerability perpetuated by the production strike, these events and behaviors amplified the feedback loops that destabilized the deep social structure of ABB-Kinleith.

Vulnerability

Apart from the destabilization of the deep social structure, a continuing sense of vulnerability is deemed essential at the edge of chaos (Pascale et al., 2000). This continuing sense of vulnerability drives the individual to a cognitive discomfort zone, making them more open to a radically different conception (Oswick et al., 2002). The vulnerability of ABB-Kinleith was amplified by the unforeseen production strike, which questioned the ongoing viability of the mill. Further, a

change in the trade union leadership resulted in a new leader who constantly stressed the vulnerability of the Kinleith mill through his language and behavior:

> You got to keep changing and trying to improve things. If you don't, you just get left behind and they have got to shut the gates then. You can't keep production going, and all the other mills must be modernizing too around the world. I explained this to a lot of people, when I first started here this mill was NZFP before CHH came and was like the flagship. And then we got few owners and now we are owned by the Americans. And we are really like the corner dairy store. Not the flagship anymore, just the corner dairy. I tell the guys you can just flick the corner dairy off anytime you like and close it down. Lots of people listen to a bit of that so….

With the continuing vulnerability and destabilization of the deep social structure (i.e., the sensitive initial conditions), ABB-Kinleith was ready to self organize to a new core identity. It was essential that employees now move towards a new core identity of being a customer focused service provider, and therefore develop a new shared understanding. However, I do not use the term self organizing in a pure sense. I consent to the argument of many management researchers that a limited influence is possible in the self organizing process of a complex system (e.g., MacIntosh & MacLean, 1999; Pascale et al., 2000). Management can set the scene by approximating the direction. The approximation of a direction is Fiol's (2002) situated re-identification phase.

6.5.2 The processes involved in the situated re-identification phase

An important process in the situated re-identification phase is to tangibly articulate the core ideology. This, as suggested by Fiol (2002), involves

verbalization of the core ideology and situated expression of its attributes. This was clearly seen in ABB-Kinleith during the situated re-identification phase.

CHH-Kinleith is a significant contract for ABB as it represented their biggest outsourcing contract in pulp and paper. The success of ABB-Kinleith, in executing the contract, would ensure more contracts of similar nature with IP worldwide. Therefore, management-ABB wanted to make ABB-Kinleith a flagship site, providing a world class customer focused maintenance service. This was management-ABB's general direction for a new core identity.

This emergent core identity was more tangibly articulated in the second period when the organizational vision was created in the Forest Camps (see Figure 6.4). Researchers (e.g., Fiol 2002; Gioia & Thomas, 1996) see vision as the core ideology, critical in aligning an organization towards a new core identity and in acting as a positive motivational force. I evaluate the organizational vision at ABB-Kinleith as moderately effective for the following three reasons: firstly, its creation was preceded by a destabilizing of the existing deep social structures. The joint visioning exercise was postponed to the second period due to the three month production strike and the delay allowed a time period for feedback loops to disturb the initial, inertia-favoring conditions (see discussion under section 6.5.1). This timing of the joint visioning exercise was unintentional. However in hindsight it proved to be an effective complex adaptation as the visioning exercise took place in a less cynical climate with greater involvement.

Secondly, the vision was not directed or dictated by management-ABB, as is conventional in command and control processes. Instead it was co-created by

representatives from all the distinct social groups. Partly as a result, the new vision statement, designed to encapsulate the attributes of the new core identity, was designed to encompass the existing multiple identities of the distinct social groups. Accordingly, this did not threaten the individual's self identity, which is often tied to existing multiple identities and the embracing of multiple identities helped build trust with management-ABB. The vision, which states that ABB-Kinleith wants to lead the world in plant productivity and maintenance, incorporated the multiple identities of middle mngt-ex-CHH and management-ABB. The goal, which included the well-being of the Kinleith mill, included the multiple identities of tradesmen, and, as postulated in the mission statement, was to be achieved through a three prong focus on partner satisfaction, profitable growth, and motivated people. A Path Finder team, consisting of individuals from all social groups who were involved in the Forest Camps, was formed soon after the Forest Camps (see Figure 6.4). It was this Path Finder team that co-constructed this new integrative vision. The new integrative vision thus became the articulated core ideology, inclusive of, but not restricted to, the new core identity of ABB-Kinleith.

Thirdly, individuals are engaged in active experimentations, which allows for situated expression of the attributes of the new core ideology (Crossan et al., 1999; Fiol, 2002). An example is the handling of mill shut downs. The mill shuts down twice a year for maintenance work, and these times are a non-productive period for CHH-Kinleith. About 30% of the maintenance budget is spent on shut downs ('shuts') and about 65,000 man hours of external resources are mobilized. Improvements in the planning and handling of shuts is crucial for the overall cost structure of the mill. ABB-Kinleith incorporates learning by involving all the

individuals who have worked on these shuts, with the desire to surpass a world class practice of 10 days.

These actions of co-creating the organizational vision and embracing the multiple identities in the new core ideology, combined with situated expressions of that ideology, acted as feedback loops that dampened the momentum to regress. However, an important reservation is the 'stickiness' issue with organizational vision. Although the vision was co-created, it is still perceived as being primarily owned by management-ABB. In my interactions with the Path Finder team members, their common response was "management-ABB is using us to do their job." Therefore, other factors such as coupling between the distinct social groups and synergy between their multiple identities, especially with the social group of management-ABB, emerged as additional feedback loops necessary to amplify and maintain the self-organizing momentum of ABB-Kinleith towards the new core ideology.

I position this coupling between social groups, and synergy between their multiple identities, as a transition phase, occurring between the situated re-identification phase and the identification with the core ideology phase (see Figure 6.5). This is an important refinement to Fiol's (2002) model as it takes account of the distinct social groups and their multiple identities, which are otherwise overlooked. This coupling and synergy, especially with the social group of management-ABB, also enables a new deep social structure to evolve. This new deep social structure is necessary to rebuild the broken trust, and is an important basis for self-referencing, especially for the individuals in the distinct social groups, as they move towards a deeper identification with the new core ideology.

6.5.3 The processes involved in the transition phase

In examining the transition phase, I first seek to make an important distinction between coupling and synergy. Coupling between social groups is relational and based on the level of trust and credibility between the social group members (Denis et al., 2001). Trust building is a socio-psychological process. When the actions of one social group (i.e., members acting on behalf of the social group), and their construed motives, conform to another social group's positive expectations, then trust, considered as an emotional resource, begins to be embedded into the inter-group relationship. Therefore, similar reciprocal behavior builds trust that can be utilized as a resource in the future.

Pratt and Foreman (2000) conceptualize synergy as the extent of interaction and coordination possible between multiple identities. Their synergy is fluid, limited in duration, and contingent upon stakeholder requirements. For example, identities holding diverse conceptualizations of the organization can seek a high synergy response to ensure some common goals are achieved. Once the situated identification is removed, synergy can quickly dissipate (Rousseau, 1998). My conceptualization of synergy is less fluid and goes more to the level of the individual's cognition. Individuals, who are highly identified with a social group, have similar cognitive maps concerning their multiple identities. However, when individuals identified with two separate social groups come together on common issues, which continue to occur, they develop common cognitive maps between them. These continued interactions foster a high level of synergy between their multiple identities. Therefore, I define synergy as "*the existence of common*

cognitive maps between individuals of the distinct social groups formed through interaction over common issues over a length of time."

However, coupling and synergy are not independent constructs. Greater coupling results from better inter-group relationships, thus improving dialogue between individuals of the social groups (Isaacs, 1993). There is greater advocacy of, and inquiry into, each group's cognitive maps, which positively influences synergy between their multiple identities. Similarly, greater synergy between their multiple identities tends to band such social groups together around common issues. If such banding is frequent, coupling between social groups is positively influenced. Therefore, when coupling and synergy improve, a greater trust, and a greater shared understanding, can be developed across the social groups. This will amplify and sustain the identification towards the new core ideology.

In the preceding section, I discussed the 'stickiness' issue of organizational vision, where it is seen to be owned by management-ABB and therefore unlikely to attract wider adherence. Therefore, coupling and synergy with the social group of management-ABB is critical for self-organizing momentum towards identification with the new core ideology. I estimated the progress of this coupling and synergy over the first, second and third periods and illustrate this in Figure 6.6 and Figure 6.7 below.

Coupling between Social Groups
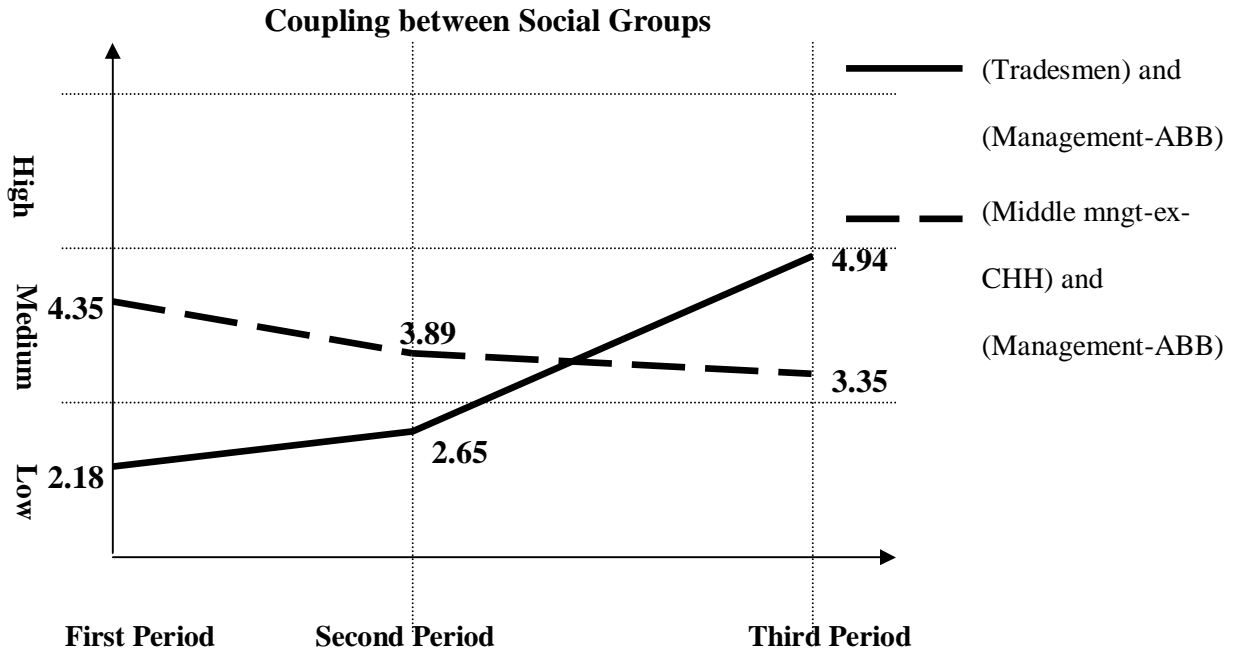
Figure 6.6 - Development of Coupling over the Time Periods

Synergy between their Multiple Identities
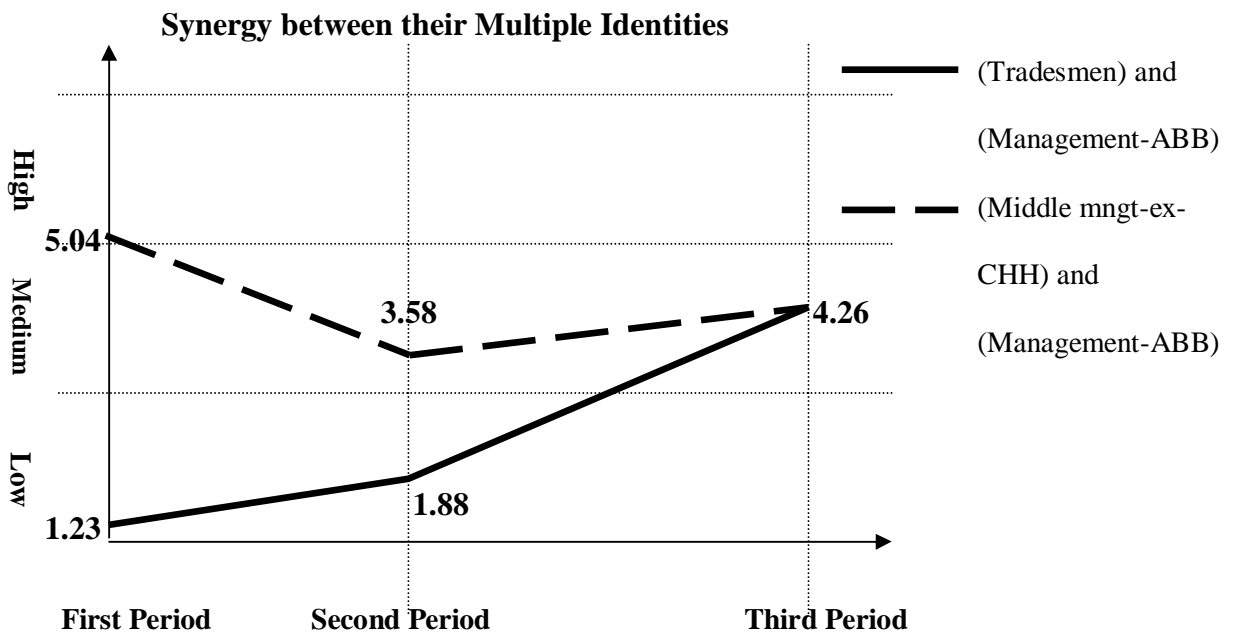
Figure 6.7 - Development of Synergy over the Time Periods

I used rhetorical techniques to assess the progress of coupling and synergy. There is precedence in the use of rhetorical techniques in other areas of research. Fiol (1989), for example, gauged the level of perceived linkage between organizational

units in joint ventures by analyzing the use of language. Dutton et al. (1994) and Fiol (2002) also advocate a greater need for the use of such techniques, especially in constructs that are difficult to quantify. I began the analyses by eliciting sentences that referred to coupling and synergy. The following statement, for example, which is echoed by middle mngt-ex-CHH, shows a decline in their coupling with management-ABB, but a corresponding increase in coupling of the tradesmen, over the time periods:

> I think now we have slipped off or are leaning towards getting off the boat. I think the supervisors got some frustrations that aren't being answered. Predominantly because we are having issues and there really doesn't seem to be an answer at the end of the tunnel. So the frustrations for the supervisors is rising, we don't seem to be getting anything finished, and we don't seem to be hearing any answers and yet for the unions they seem to be getting on quite well. Oh I think when we first started it was the other way around. I think the tradesmen were way down here and the supervisors were way up here. I think the tradesmen under the last two years have come right up.

Similarly, the statement below by middle mngt-ex-CHH, taken from an interview relevant to the third period, shows the improvement of the synergy of tradesmen with management-ABB:

> Starting with the tradesmen, I see a much more positive attitude. A willingness and in fact at times being patient with wanting to do things differently…..you know….you need to get some of these changes happening you need to get things in place. But at the same time, an expectation that those things are for a purpose they are not changes for changes sake. So yeah, I think that's a significant difference from before

I then estimated the levels of coupling and synergy by gauging the sentiments from the transcribed interviews, and assigned scores from 1 to 7 (1 = Very low and 7 = Very high). Appendix 8 shows an interview excerpt and the estimation I made. I then averaged the score and triangulated this with shop floor observation and informal discussions with the tradesmen and middle mngt-ex-CHH. I presented these trends in coupling and synergy to the management-ABB, and then in the two day workshop to selected individuals from all social groups, and finally to the entire organization. In all of these forums, the response was an overwhelming agreement with the trends, thus providing validation for my estimation.

Tradesmen and management–ABB

The coupling of management-ABB with tradesmen has improved over the time periods (see Figure 6.6). Management-ABB started a collective wage agreement with the engineers union in the month of October 2003 and that was signed in March 2004 (see Figure 6.4). This showed that management-ABB was willing to empathize with the tradesmen's valued identity, and helps builds trust and credibility between the two social groups (Ellemers, Gilder, & Haslam, 2004). In the words of one tradesman:

> I say that simply because of the way the collective agreement went. The collective agreement was very good. ABB know they need to get the union on their side, which are the workers, and if you get the workers on side then we can all move forward and try and make it all work for everybody. In a lot of things it is working very well. The collective agreement is very good.

Management-ABB maintained their reach to the tradesmen level and had an open-door policy with them. The Path Finder team was given the mandate to create a friendly atmosphere and improve communication within ABB-Kinleith. The Christmas party for 2003 (see Figure 6.4), organized by the Path Finder team, involved the participation of families. This was well received by the tradesmen and help build relationships between the social groups.

A corresponding improvement in synergy between the multiple identities of tradesmen and management-ABB is also seen in Figure 6.7. Management-ABB started a Future Leaders program in September 2003 for the tradesmen (see Figure 6.4). Leadership training was provided for those who had applied and who were selected, and the potential leaders empowered to make independent decisions in their department. Management-ABB also opened up information to the tradesmen level, and implications arising from the information are frequently discussed in departmental meetings. This minimizes the mental model variance existing between individuals of the social groups, creating common perceptions and enhancing synergies.

The tradesmen were also involved in a community based project as ABB-Kinleith. The project, to develop a dirt track for mountain biking, was completed early 2004 (see Figure 6.4). All of the tradesmen participated in this project donating a total of 1200 man hours (out of their normal work hours). This was the biggest corporate donation made to the Tokoroa community and was singled out for a community award. The publicity from this initiative further synergizes multiple identities through a common identification with ABB-Kinleith.

Middle mngt-ex-CHH and management-ABB

Unlike the tradesmen, the coupling between the middle mngt-ex-CHH and management-ABB showed a decline over the time periods (see Figure 6.6). Middle mngt-ex-CHH came on board earlier than the tradesmen and were involved in the preparation for the contract commencement. Management-ABB relied heavily on their localized knowledge and depended on them in the selection and recruitment of tradesmen. Middle mngt-ex-CHH were given leadership training in February 2003 (see Figure 6.4) and were motivated to make the contract succeed. The level of coupling was above average at the start of the contract. However, issues, which concerned middle mngt-ex-CHH, were not sufficiently addressed by management-ABB who focused more towards tradesmen. This increased the level of frustration and negatively influenced the coupling between the two social groups, as captured in the words of one middle mngt-ex-CHH:

> We have been in negotiations with ABB about certain things for 10 or 11 months now and still no answers. There were things like the bonus. In our eyes the bonus is never going to be paid out. The site manager admits there are some anomalies about how the bonus is set up and we personally cannot see it ever being paid out. There were things like overtime. I mean we don't get paid overtime but we do a hell of a lot of long hours in the shut. It's only just we wanted some time off, and it was things like that that took a long time to sort out.

The decline in coupling has had a negative influence on synergy between the multiple identities (see Figure 6.7). Middle mngt-ex-CHH had an expectation that ABB would introduce world class systems and would enhance their identity of "a place with a scope to enhance their technical skills" (see Table 6.1). Therefore,

the level of synergy was higher at the beginning, as noted in the words of a middle mngt-ex-CHH:

> And they had a lot of high powered presentations and ABB used a lot of very good Power-Point presentations to explain how they did business, their global reach, their global expertise. So I personally for instance, had very high expectations of them as a maintenance and reliability experts, and having very mature and sophisticated systems which they would use their global capability to bring to the mill and institute very quickly.

However, such a world class system never materialized. This not only created credibility issues with management-ABB, but also impacted negatively on synergy in the first and second periods. However, I assess the level of synergy to have marginally improved in the third period (see Figure 6.7). There is now an acceptance by middle mngt-ex-CHH that the world class system will not materialize, and that middle mngt-ex-CHH need to act to enhance their identity. A synergy exists with management-ABB, in trying to create ABB-Kinleith as a world class site:

> I don't see any indications that we have any sort of global resource that's accessible. For instance on, on the planning side I've developed a lot of those planning systems myself in-house because nothing has come from overseas and I think that will be the same with most of it. Most of it will be developed in Kinleith mill. We will develop some centers of excellence within New Zealand and hope that we can actually export that back out to ABB. And there's certainly potential here for us to be the best there is in ABB when it comes to full service maintenance, particularly in pulp and paper

6.5.4 The processes involved in the identification with core ideology phase

At the conclusion of this study, the self organization towards identification with the new core ideology is still taking place. Therefore, at this point in the research, the final outcome of this phase is uncertain. However, it is my assessment that while the self organization is proceeding, it will continue to experience friction, especially with the declining coupling and synergy of middle mngt-ex-CHH with management-ABB.

Middle management is crucial as they often operationalize the strategic objectives of the organization (Nonaka & Takeuchi, 1995). Due to the reach of management-ABB at the tradesmen level, certain information bypasses middle mngt-ex-CHH. For example, management-ABB meets with the trade union representatives fortnightly with no involvement of middle mngt-ex-CHH. Information reaches the tradesmen before it reaches middle mngt-ex-CHH. This not only creates a loss of empowerment at the middle mngt-ex-CHH level, but also creates issues at the tradesmen level, affecting coupling between the distinct social groups.

6.6 Summary, Implications, and Limitations

This single case based study empirically validates and refines Fiol's (2002) model. This model details the process of developing a new shared understanding, using an Organizational Identity perspective.

In applying a Complexity theory perspective, I observed that ABB-Kinleith was driven to the edge of chaos in the de-identification phase. At this edge of chaos a bifurcation, which could have either caused ABB-Kinleith to regress towards the earlier equilibrium state, or to self organize toward a new state altogether, arose. Initially, the momentum to regress was strong because of certain management-ABB actions, which acted as feedback loops that reinforced the existing deep social structure. However, subsequently, management language and behavior, especially in dealing with unforeseen and random events, acted as feedback loops that de-stabilized the sensitive initial conditions.

In the situated re-identification phase, Management-ABB had to approximate the desired direction by setting the scene for the new core identity to emerge, and could not dictate the direction through typical command-and-control fashion. I observed that management-ABB did this by creating the circumstances for greater self-organizing to happen, through tangible articulation of the new core identity using the organizational vision; and by creating situations where situated expressions of the new core identity attributes were possible.

In hindsight, the co-creation of the organizational vision in the situated re-identification phase, was an effective, although unintended, complex adaptation by management-ABB to changing conditions. The Forest Camp, where the joint vision was co-created, had to be postponed to the second period due to the three month production strike (see Figure 6.4). This represented a more effective time frame to articulate the key attributes of the emergent core identity for ABB-Kinleith in the organizational vision. The organizational vision is thus the new core ideology, in which attributes of the new core identity are embedded.

In this case study I identified a transition phase, and refined Fiol's (2002) model accordingly (see Figure 6.5). In the transition phase, coupling and synergy between the distinct social groups is critical to achieve identification with the new core ideology. Identification with a new core ideology is built on intergroup trust, especially with the social group of management-ABB, as organizational vision "sticks" with management-ABB and is seen to be owned by them. Management-ABB's behavior and language influences the degree of coupling. The greater the coupling with management-ABB, the greater will be the willingness of the different social groups to engage with the attributes of the emergent core identity, which is embedded in the core ideology.

Synergy, as defined in this study, is the existence of common cognitive maps between individuals in the different social groups. Synergy, therefore, involves common perceptions developing between social groups. The greater the level of synergy, the easier it would be to align perceptions with the attributes of an emergent core identity.

Coupling and synergy are thus necessary feedback loops, amplifying and maintaining the self-organizing momentum of ABB-Kinleith towards identification with the new core ideology. However, coupling and synergy are interrelated. A greater degree of coupling makes it easier for dialogue to occur between individuals in the different social groups, positively influencing synergy between their multiple identities. Likewise, a greater degree of synergy between multiple identities tends to band such social groups together, influencing the level of coupling. It is therefore a reinforcing cycle.

However, a variance is seen in the social groups of middle mngt-ex-CHH and management-ABB. A drop in coupling between these two social groups was observed, but was not accompanied by a similar drop in the level of synergy (it improved marginally in the third period). I regard this as a temporary phenomenon where middle mngt-ex-CHH was willing, because of the chance of enhancing their existing identity of 'scope and skills in engineering related work,' to engage in the attributes of the new core identity. Glynn (2000) refers to this temporary alliance as "collaborative evolution" (p. 286) in order to engage a common cause. It cannot be sustained over the long term, unless coupling improves. Indeed, an environmental jolt is likely to reveal these latent differences (Glynn, 2000).

This study highlights that coupling between social groups, and synergies between their multiple identities, are important resources that determine the level of flexibility of an organization for a core identity change, especially in the transition towards a new core ideology. Therefore, the combined resources of coupling and

synergy, which I will refer to as "linkage," determine the flexibility of an organization for a core identity change.

It is accepted in the literature that a strengthening of linkages improves the flexibility of an organization for a core identity change (e.g., Denis et al., 2001). This strengthening of linkages brings a sense of unity that binds people together in situations of core identity change (Fiol, 2002). However, this strengthening of linkages brings diminishing returns, and beyond a certain point begins to be counter-productive. With an ever increasing linkage, powerful norms set in and dominant assumptions and beliefs pervade the organization. Therefore, future core identity changes outside the organization's norms are ignored (Shimizu & Hitt, 2004). Even if the need for such a change is noticed by some, the need for action is delayed due to the constraining effects of these norms, greatly reducing the flexibility of the organization to change (Shimizu & Hitt, 2004). A strengthening of linkages also deepens interpersonal relationships, creating a reluctance to engage in emotionally painful changes. The tendency to cover-up, or bypass, emotionally difficult situations increases (Argyris, 2004). Therefore, it is imperative for management to maintain a productive level of this linkage.

6.6.1 Implications for management

An important implication is the need for complex adaptation to changing conditions, especially in situations of an emergent core identity. I list some simple order-generating rules[11], which I deem necessary to sustain the momentum

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[11] 'Simple order-generating rules' is best explained using the example of migratory flight of birds and the seemingly orderly patterns that emerge in flight. Each bird, in flight, would stick to simple

towards a new core identity. These simple order-generating rules must neither be too rigid, to avoid orienting towards command and control, nor must be too loose, to lack sufficient approximation towards a desired direction:

1. Unforeseen consequences, which are almost bound to happen in any core identity emergence, present unique opportunities to disturb the previous initial conditions by reflecting sharp departures from the existing deep social structures. It is more effective to have this precede any tangible articulation of the emergent core identity.

2. The articulated core identity must be co-created, and embrace the existing residual multiple identities through trust-building dialogue

3. Jointly articulated core identity, through the organizational vision, could be "sticky," and be seen to be owned by the management. Therefore, management language and behavior must seek inclusive involvement to build coupling and synergy between the distinct social groups in the organization. These must be handled as important considerations because management can tend to neglect these aspects in the high pressure situation of a core identity change.

As suggested earlier, management must be aware that above a certain level of coupling and synergy, the linkages between social groups become counter-productive. Maintaining an appropriate balance has important implications for management. How can managers assess the strength of the linkage and determine when it tends towards being counter-productive? Since the awareness of such

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rules that generates a seemingly order generating behavior in the complex migratory flight. These simple order-generating rules are entirely local and emerge from bottom-up. It is not top-down leader directed and dictated formation, but rather an emergent phenomena.

linkage may lie cognitively latent within individuals, management deployment of measurement tools may be ineffective. In such circumstances, managers might use rhetorical techniques, facilitate dialogue, especially between groups who do not usually talk openly, create spaces for joint, cross-group discussions, and orient towards underspecified future possibilities. These, however, require management to develop a sense of awareness of the linkages that exist in their organization, and to be trained to analyze conversation. This type of management development is essential in the current environment of discontinuous changes. For example, how much does "we," an inclusive referent, figure in individual conversations (Fiol, 2002)? What frequency of that kind of language prompts a non-productive level of coupling between social groups? How much does "not" or "no," linguistic signs of negation, figure in conversation when discussing the suitability of new ideas generated? These factors can indicate the extent of norms developing between social group members and prompt different levels of synergy between multiple identities.

By determining the level of linkage, management is better informed on what interventions help keep linkage at a productive level. Interventions such as cross postings between social groups, infusing new thinking, developing intergroup cooperation, or even the use of effective language when communicating with group members, can be used to productively enhance linkage.

6.6.2 Limitations and directions for future research

Finally, I acknowledge two limitations, which also open avenues for further research. Firstly, the primary limitation is that this research is based on a single

case study and the duration of the study is very limited. The conclusions drawn are contextual, and hence need validation with further case studies.

Secondly, there are other social groups, such as new employees and customer groups, which have been ignored. New employees recruited directly for the outsourcing contract were not included because of their small numbers. However, such individuals can have an influence on the attitude and behavior of the older employees. This is especially true with the open climate, which brings opportunities for them to express their opinions, being progressively developed at ABB-Kinleith. The organizational context is thus continuing to evolve. As the organization grows, and morale improves, the influence of newcomers should correspondingly increase (Feldman, 1994). Similarly, the customer group has an important role in the core identity emergence. This group not only provides an avenue for the distinct social groups within ABB-Kinleith to distinguish a "them" (i.e., CHH-Kinleith) and an "us" (i.e., ABB-Kinleith), but the cost constraints imposed by the customer group is counterproductive to the creation of a world-class maintenance site. The influence of these other groups merits further investigation.

6.7 Contribution to Learning Organization

This research study in Chapter 6 contributes significant insights into the socio psychological process of moving from interpretation to integration (the development of a new shared understanding across the organization). Specific

insights, which provide important practical implications for developing a learning organization, include:

1. Established organizations usually have distinct social groups, with individuals belonging to these distinct social groups bearing multiple identities. The level of coupling between these distinct social groups, and synergy between their multiple identities, determines the level of flexibility of the organization towards double-loop change.

2. Coupling between the distinct social groups, especially with the social group of management, is critical, as the new beliefs and assumptions articulated through the organizational vision are often seen to be owned by them. Therefore, in an ideal learning organization, management must seek to enhance coupling with the other distinct social groups, especially through their leadership style.

3. Synergy between the multiple identities of the social groups is also an important resource to be nurtured in a learning organization. Synergy helps to align perception in situations of double-loop change. Synergy can be developed by ensuring that individuals across all hierarchies have access to valid information, so that unproductive levels of mental model variance would not develop in the organization.

4. However, synergy and coupling must be maintained at an optimum balance. An overriding superordinate identity, elastic enough to accommodate double-loop change without being destroyed, to which all other multiple identities can be aligned with, facilitates intergroup cooperation. It simultaneously permits a healthy level of cognitive conflict between individuals of the distinct social groups.

5. In a double-loop change, some outcomes can adversely affect certain multiple identities. If the self identities of individuals are intertwined with these multiple identities, strong ego defensive reactions can arise (Brown & Starkey, 2000). Therefore, it is best to embrace the attributes of these multiple identities in the new core ideology that is to be created. If this is not possible, then management must attempt to engage positively with the emotions that surface.

Chapter 6 looked at the detailed processes involved in moving from interpretation to integration, where a new shared understanding needs to be developed in the organization. Chapter 7 collates the insights gathered from my investigation into the four research questions (Q1-Q4), particularly that of Q3 and Q4, and proposes key interventions designed to overcome critical learning barriers and develop a learning organization. If these organizational interventions are implemented, what type of learning organization orientations will arise? How can we assess these orientations of a learning organization? This gives rise to my fifth and final research question, Q5: *"What are the new orientations of a learning organization, and how do I measure them?"*

CHAPTER 7

LEARNING ORGANIZATION INTERVENTIONS AND ORIENTATIONS

Q5: "What are the new orientations of a learning organization, and how do I measure them?"

7.1 Introduction

The research journey described thus far concludes my investigation into the four research questions (Q1-Q4) set out in the introduction chapter (Chapter 1). That investigation gave me key insights into the critical learning barriers affecting the learning organization. Chapter 3 described how these barriers can be categorized into five key dimensions: intrapersonal, relational, cultural, structural, and societal.

So how might an organization intervene and engage with these dimensions of learning barriers? I have accumulated the key insights from the study of double-loop change initiation (as described in Chapter 5), and the study on the development of an organizational wide new shared understanding (as described in Chapter 6). The insights from these studies provided me with specific contributions to the learning

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organization as described in sections 5.6 and 6.7. Based on these insights gathered from the case studies, I suggest the following nine key learning organization interventions: (1) Identifying, developing, and dispersing double-loop mastery; (2) Enabling constructive contradictions; (3) Creating a superordinate organizational identity; (4) Building emotional intelligence (in individuals and groups); (5) Ambidextrous leadership; (6) Strategic support for experimentation; (7) Promoting 'systems doing'; (8) Making valid information accessible; and (9) Institutionalizing scanning across industry boundaries. How the insights derived from answering the research questions Q3 and Q4, are linked to the nine organizational interventions, is illustrated in Figure 7.0 below.
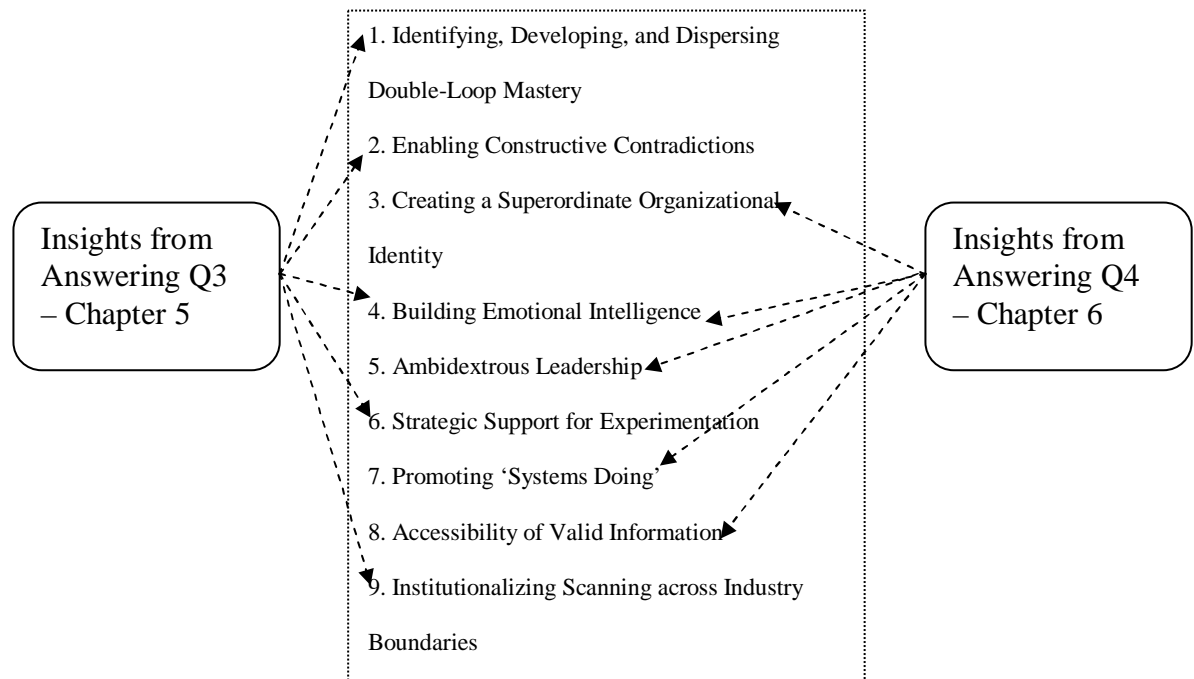
Figure 7.0 – The Link between Insights from the Answers to Q3 and Q4 and the Organizational Interventions

The framework in figure 7.1 below illustrates these nine organizational interventions, and their impact on the levels of learning. I then argue that the successful implementation of these interventions will result in five new learning organization orientations: (1) Genetic diversity; (2) Organizational ideology; (3) Organizational dualism; (4) Organizational coupling; and (5) Strategic play. These new learning organization orientations will be elaborated in section 7.3.
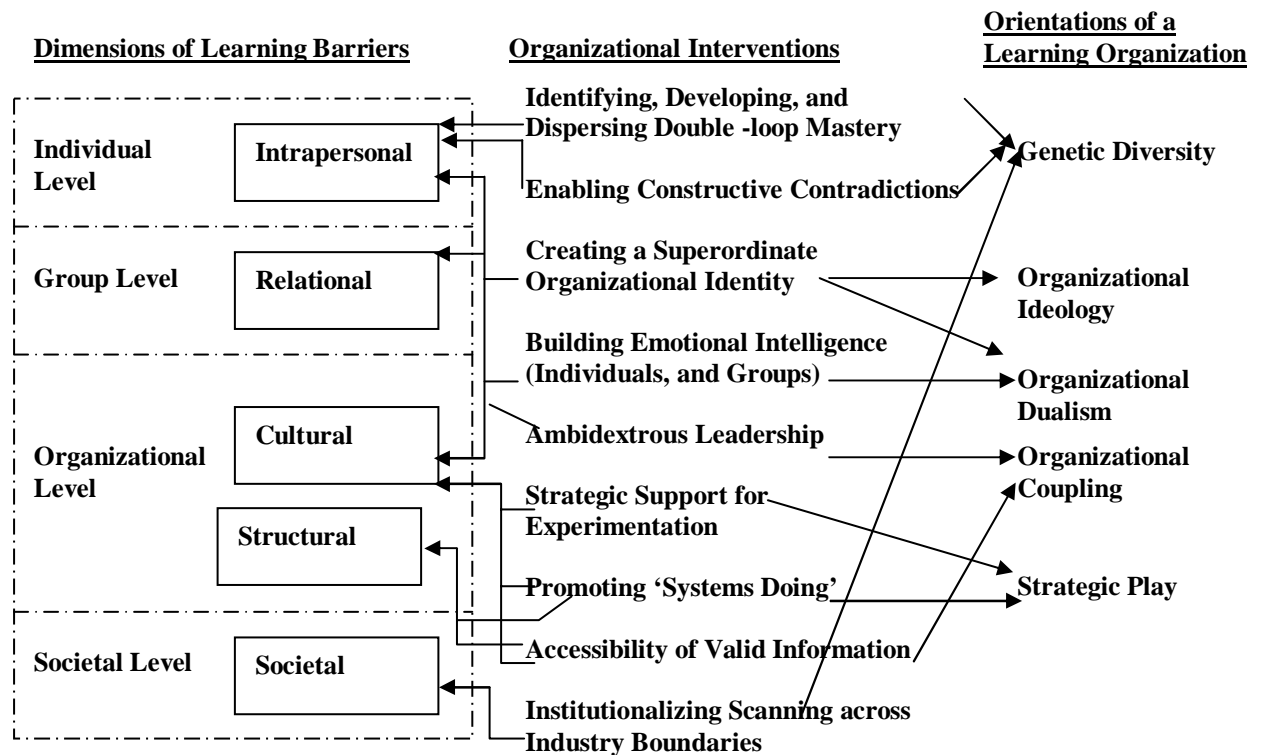
Figure 7.1 - Organizational Interventions and the Orientations of a Learning Organization (Source: *Sun et al., 2005*)

This chapter is structured as follows. Section 7.2 describes the nine organizational interventions. Section 7.3 explains the five new orientations of the learning organization that arise with the implementation of these nine interventions. Section 7.4 describes a meta-framework that I developed to construct an effective

performance measurement instrument. Section 7.5 argues the case for developing a new measurement instrument for the learning organization. Finally, section 7.6 describes the construction and refinement of the new learning organization measurement instrument.

7.2 Organizational Interventions

After many decades of involvement, both at the practical and scholarly level, Argyris (2004) observed that, in spite of the recognition of learning barriers, there is still a dearth of scholarly research on how to overcome them. Two fundamental strands of reasoning underpin my argument for the nine organizational interventions:

1. The interventions are intended to produce actionable knowledge (Argyris, 2004). As a result they emphasize producing valid information, giving individuals an opportunity to make an informed choice based on the valid information, and assessing the degree of effectiveness of any implemented actions. These are governing values for producing a productive mindset, which is needed for double-loop learning.

2. These interventions consider the levels of learning, i.e. individual, group, organizational, and even societal (Sun & Scott, 2003a)[12].

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[12] In Chapter 3, I considered the inter-organization as an additional level of learning. However, in developing the measurement instrument for the learning organization, I have omitted this level of learning. Extensive research into the inter-organizational level of learning is needed which is outside the scope of this research.

The primary purpose of the organizational interventions is to generate a context where Model II theory-in-use is possible, where the governing values necessary for a productive mindset are allowed to flourish in the organization. Organizations must continue to explore new forms and designs of organization, and radically alter existing beliefs, in the face of rapid and discontinuous changes in the external environment. However, one should not throw the "baby out with the bathwater." Useful routines can be exploited, and enhanced, through single-loop learning, alongside continuous exploration for new alternatives. Exploration is termed as feed-forward learning whilst exploitation is termed as feedback learning by Crossan et al. (1999). Figure 4.1 in section 4.2.2 (see Chapter 4) illustrates this feed-forward and feedback processes.

Crossan and Berdrow (2003) describe the inevitable tension that arises between exploration and exploitation. Organizations need to constantly align with the rapid changes in the external environment (Mintzberg et al., 1998). This requires them to constantly re-evaluate their capabilities, systems, processes, and structures. In such a dynamic interaction, the tensions raise two significant questions:

1. What new learning is required to meet changes in the external environment (i.e., exploration)? and

2. What current and institutionalized learning must be emphasized and effectively exploited (i.e., exploitation)?

This exploration–exploitation tension (Crossan & Berdrow, 2003; Crossan et al., 1999), also described by Argyris (2004) as balancing the two degrees of freedom (i.e., exploit Model I for routines, and, where suitable, use Model II for new alternatives), must be appropriately managed in a learning organization. I argue that the implementation of these nine interventions enables an organization to productively manage this exploration–exploitation tension (hypotheses explaining the link are elaborated in Chapter 8). I will now elaborate on the nine organizational interventions illustrated in Figure 7.1 above.

7.2.1 Identifying, developing, and dispersing double-loop mastery

Although it may seem easy in theory, developing a capability for double-loop learning is, in practice, extremely difficult to sustain (Argyris, 2004). Although accepting Argyris's view that such capability can be learnt, I contend, in this study, that the capability of double-loop learning is very much an individual characteristic. There are individuals who are willing to take risks in order to advance their personal vision and their double-loop ideas. They are usually creative risk takers, who are self confident, with a preference for change, and have the ability to view situations paradoxically. They are individuals for whom critical self reflexivity (Brown & Starkey, 2000; Cunliffe, 2004) comes more easily than to others, and hence can be more easily developed. Critical self reflexivity means a capability to look at an alternative view of oneself and the organization, and to have sufficient emotional resources to question one's self concept. This view is consistent with observations made by other researchers (e.g., Meyerson, 2001).

Organizational intervention to identify such individuals, develop their capability for critical self reflexivity, and ensure their spread across the critical activities of the organization, is essential for organizational learning. If such individuals are absent in the organization, they should be recruited from outside, so that fresh stimuli can be brought in (Probst & Raisch, 2005). The organization should involve them in opportunity-finding teams, provide them with necessary resources, and foster an environment that nurtures and implements the creative insights produced by the teams. It is productive to immerse such teams in the critical problems of the organization for a period of time, and then dissociate them from the specifics of the problems so that new insights can emerge (Charbit & Kiefer, 2004). Such dissociations might, for example, take the form of off-site retreats, where team members are disengaged from their usual work surroundings.

The placement of such individuals in middle level management is also a vital consideration for organizational learning. Middle management is constantly caught between the tension of senior management strategy and operational level realities (Nonaka & Takeuchi, 1995). Such tension can potentially result in double-loop learning, and can catalyze creative solutions.

7.2.2 Enabling constructive contradictions

Critical self reflexivity can be best practiced in an environment of constructive contradictions. A contradiction arises when an event or information calls into question the existing mindset of individuals, which is often constrained by the

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underlying beliefs and assumptions of the organization. Such underlying beliefs and assumptions are, more often than not, driven by the need to seek legitimacy within the industry segment (Di Maggio & Powell, 1983), so that organization can be isomorphic with their industrial environment (Seo & Creed, 2002). Such contradictions become constructive when they move cognition from a comfort zone to a discomfort zone, and induce individuals to question the conventional beliefs and assumptions of the organization (Oswick et al., 2002). An environment of constructive contradictions can be enabled by allowing wider and easier access to information that has strategic value. Examples would be information arising from market activities, performance inefficiencies, customer feedback, and even discrepancies in practice (in comparison with other organizations within and outside of the industry segment). The deliberate deployment of language, such as metaphors, irony and paradox in organizational communication, by management offers another avenue for inducing contradictions (Oswick et al., 2002).

The consequence of maintaining contradictions in the organization is the resulting conflicts that arise. Such conflicts can be at the emotional level and at more content or task level (Rahim, 2002), especially when conventional beliefs and practices are questioned. Again, maintaining a moderate level of conflict is essential in encouraging double-loop learning (see Rahim, 2002, for a greater elaboration). Therefore, effective leadership includes knowing the productive level of contradictions to nurture in the organization, and in maintaining a moderate level of conflicts.

7.2.3 Creating a superordinate organizational identity

A description of organizational identity was dealt with in section 6.2.2 of Chapter 6. However, I would like to resummarize organizational identity, before describing a superordinate identity. Organizational identity has a long history and is recognized as a construct that affects individual perception, organizational behavior, and effectiveness. It impacts the individual, group, and organizational level, but it is only in recent years that its relevance to organizational learning has been explored (e.g., Brown & Starkey, 2000). Organizational identity is described as the collective perceptions and beliefs of individuals regarding what are central, distinct, and enduring attributes of the organization (Albert & Whetten, 1985). If the individual perceives the attributes of the organization to be similar to the attributes that define themselves (i.e., their self identity), then their self esteem is tied to the organizational identity. Any organizational identity change that impacts on an individual's self identity is likely to attract strong ego defensive reactions (Brown & Starkey, 2000).

In the corporate reputation literature, identity, at a fundamental level, is seen as the deep rooted belief regarding how the business should function (Davies et al., 2003). Such core organizational identity has its roots in organizational history, defines the strategic orientation of the organization, and is resistant to any ephemeral attempts to change (Gioia et al., 2000). Although this core identity is said to be enduring, its durability has been recently challenged (e.g., Fiol, 2002; Gioia et al., 2000; Meyer et al., 2002).

Without taking sides in that debate, it is important to recognize that multiple organizational identities can exist alongside the core organizational identity. Such multiple organizational identities are socially constructed in order to meet the varying requirements of stakeholders (Pratt & Foreman, 2000). They are held by various social groups, often more salient to the individuals than the core organizational identity (Meyer et al., 2002), and more malleable (Davies et al., 2003). Such multiple organizational identities can have a high or low synergy with one another (Pratt & Foreman, 2000), and a high or low association with the core organizational identity (Davies et al., 2003). Double-loop learning that calls for a deletion, or a fundamental alteration, of some multiple identities, would probably attract resistance in some quarters. This is particularly likely if there is low synergy between the multiple identities and a deletion, or alteration, of one particular identity is seen to benefit, or disadvantage, others. Similarly, a double-loop learning that alters the core identity can draw strong resistance from the various social groups whose multiple identities are strongly associated with the core.

The organizational identity literature refers to another type of identity called the "superordinate identity" (Hogg & Deborah, 2000, p. 151). This is more a core ideology (Fiol, 2002), and can be said to be different from the core organizational identity, which generally reflects the strategic paradigm of the organization (Davies et al., 2003). A superordinate identity should be abstract and have a sufficient degree of ambiguity, so that multiple identities can create a varying conception of its meaning, while it still generates sufficient coherence (Fiol, 2002). Such a superordinate identity is therefore said to possess greater elasticity, and hence is not easily

destructible by double-loop learning. If individuals, whilst maintaining their membership in the multiple identities, can identify themselves with the superordinate identity, then a high degree of synergy is achieved between the multiple identities, which facilitate intergroup cooperation. Therefore, a change in the strategic direction of the organization is less painful if it is seen to align with the superordinate identity, greatly enhancing the change capability of the organization. For example, the superordinate identity of a religious institution is to serve God and humankind. Often, such religious institution (e.g., the Anglican Church) would have commercial operations (e.g., hospitals) which are business orientated, and other non-profit orientated operations. These operations would have multiple identities but could maintain a good degree of synergy between them by aligning with the superordinate identity of serving God and mankind. Such an identity is not time or environmental dependent, and can serve to bind the membership together. Another trend seen is the move towards sustainability. Some more progressive organizations have installed sustainability coordinators to ensure projects are aligned with the key values of sustainability. Can a learning organization, embrace sustainability as a valid superordinate identity? If so, can it influence the learning barriers of an organization by minimizing its impact? These are fascinating areas that hold potential for future research, and indeed a potential rethink of organizational design.

7.2.4 Building emotional intelligence

There have been recent attempts to study the influence of the emotional intelligence of individuals on organizational learning (e.g., Scott-Ladd & Chan, 2004), but the

emotional intelligence of groups (Druskatt & Wolff, 2001), which is a recently emergent field, has received little attention. The emotional intelligence of groups has norms that operate at individual, group, and organizational levels.

Operation at the individual level: At the individual level, the focus is on interpersonal understanding and the provision of emotional support. Individual perspectives are allowed to emerge and are respected, whilst strong negative emotions such as anger, a sense of loss, and concern, can be surfaced; and support/care provided by group members. Such inducement of a positive response to strong negative emotions can broaden an individual's cognition (Seo, 2003), making it possible for double-loop learning to take place. Rhetorical evidence suggests that individuals who provide such interpersonal emotional support must be emotionally intelligent (Goleman, 1998). They must possess both self awareness to regulate their own emotions, as well as social awareness, to regulate the emotions of others (Goleman, 1998). I would go as far as to suggest that an emotionally intelligent group requires emotionally intelligent individuals, but a collection of emotionally intelligent individuals do not necessarily constitute an emotionally intelligent group. Groups have their own unique perspectives that are different from individuals (Druskatt & Wolff, 2001).

Operation at the group level: At the group level, the focus is on removing issues that surround the group and to create an affirmative environment within the group. A constant reminder of their importance, a reminder of their previous wins, and encouraging optimism are norms at the group level.

Operation at the organizational level: At the organizational level, the focus is on understanding the culture and politics of the organization, and where group members build networks in order to support the transfer of double-loop learning initiated by them. Engagement at this level enables a new shared understanding to develop across the organization.

7.2.5 Ambidextrous leadership

Organizations cannot engage effectively in double-loop learning unless the effort is supported by the dominant coalition, because their actions have a strong influence on the organizational culture (Hofstede, 1998). Their actions and behavior differ considerably from middle management (Norburn, 1989). This difference goes beyond influencing the leader-follower relationship, which is focused mostly at small groups, to a more strategic-level influence over the organization in such activities as organizational learning (e.g., Vera & Crossan, 2004) and organizational change (e.g., Denis et al., 2001). For these reasons, leadership at the dominant coalition level has been termed as strategic leadership (Hambrick & Pettigrew, 2001).

Hitt and Ireland (2002) suggest that strategic leadership focuses on building human capital and social capital. Whilst human capital deals with individual level competencies, social capital leverages tacit knowledge by ensuring capable individuals work effectively within their communities of practice. Such social capital also extends externally, that is, outside the organization where effective relationships are built with business partners to leverage certain critical competencies. Therefore,

the primary role of strategic leadership is to enhance the organizational learning needed to exploit available knowledge and to explore new knowledge for future competitive advantages (Hitt & Ireland, 2002).

Empirical evidence shows that organizational learning can be enhanced if the dominant coalition possesses ambidextrous qualities (Rooke & Torbert, 1998). Ambidextrous leadership has four qualities: ambidextrous style (Vera & Crossan, 2004), ambidextrous reach (Vera & Crossan, 2004), ambidextrous control (Pearce, 2004), and ambidextrous awareness (Goleman, Boyatzis, & McKee, 2002).

An ambidextrous style incorporates both the transformational and transactional styles of leadership. Using such a style, the dominant coalition has the capability to do both and can apply the relevant style to the relevant situation. A transformational style is usually inspirational, questions existing beliefs, and leads through enthusiasm and vision. A transformational leader is able to motivate the individual to move beyond self for the sake of the organization. A transactional style involves managing by setting goals, articulating what is expected, providing feedback, and rewarding according to goal achievement. A transformational style of leadership can be emphasized when double-loop learning is required, whilst a transactional style of leadership is important to emphasize and establish useful routines (Vera & Crossan, 2004).

Ambidextrous reach interacts with the top hierarchy, as well as sometimes by-passing the top hierarchy and interacting with the middle and lower level hierarchies when

needed. Such breadth and depth of reach is essential for double-loop learning, especially when a new shared understanding is required to be developed across the levels of learning.

Ambidextrous control concerns the balance between vertical and shared leadership, particularly in a group learning scenario. Vertical leadership is the downward influence of the dominant coalition and is necessary to ensure that a vision is set, strategic direction is followed, and broad engagement structures are in place for groups to operate (Pearce, 2004). Shared leadership seeks members in the group to contribute to the leadership process. The right balance in control is crucial for managing the complexities involved in double-loop learning, especially in a dynamic environment (Pearce, 2004).

Ambidextrous awareness is a characteristic of emotionally intelligent leadership. Through it, members of the dominant coalition display self awareness as well as social awareness, and are able to comprehend and regulate their emotions as well as the emotions of others. Such awareness is crucial, since engagement with double-loop learning often draws strong emotional reactions, especially when individuals' organizationally based self esteem are disrupted (Seo, 2003).

Therefore, an ambidextrous leadership, displaying the four qualities described above, is able to influence learning at all levels of the hierarchy, and appropriately manage the exploration-exploitation tension. I must emphasize that it is extremely rare to find

a single individual having all four qualities. What is emphasized here is the dominant coalition, as a team, possessing the right mix of the four qualities.

7.2.6 Strategic support for experimentation

Experimentation, especially when it comes to double-loop learning, has been recognized as an important factor in a learning organization (Dibella & Nevis, 1998; Garvin, 1993; Watkins & Marsick, 1996). However, experimentation in an organization is unlikely to be effective unless it is supported by the dominant coalition. Leadership support for experimentation is considered a necessity for several reasons. Firstly it provides a 'sand pit' where ideas can be trialed, assessed, and pitfalls discovered. This allows necessary precautions to be taken to minimize failures in the wider implementation. Secondly, it provides a platform to build shared understanding across the organization, especially when it comes to double-loop learning (Crossan et al., 1999). It provides 'doubting Thomas's' (i.e., those who believe only when they see the results), an opportunity to view and understand the need for double-loop learning (e.g. Crossan & Berdrow, 2003). In this sense, it helps minimize resistance to change in the wider implementation. Thirdly, it creates and enhances an identity of an innovative organization. Such an organizational identity is important for a learning organization, especially since individuals must perceive themselves to be innovative and flexible, and see organizational culture as supportive of innovation. And fourthly, it provides an opportunity for 'systems doing.'

The 3M Corporation is an example of an organization where strategic support is given for experimentation. Management provides a simultaneously loose-tight support for experimentation. Flexibility and freedom is given for experimentation, with financial resources and support provided. However, individuals/teams involved in leveraging technological core competencies for new product development (Quinn, 2005), must show financial returns for their innovation with productive failures duly accounted for. This innovative culture is endemic within the 3M Corporation.

7.2.7 Promoting 'systems doing'

I have adopted the term 'systems doing' to describe the participation of individuals from all functions of the organization in active experimentation. Rather than narrow functional experimentation, which only promotes silo mentality and suboptimization, its focus is on system wide experimentation. 'Systems doing' becomes all the more critical when double-loop learning is involved. 'Systems doing' is intended to break down political barriers, discover the inter-functional intricacies, and provide an opportunity for organization-wide ownership of any intended double-loop learning. Especially in larger organizations, where experimentation seems to occur functionally and in pockets of units, management must collate these disparate experimentation pits, provide direction and resource support, and ensure organizational wide participation, particularly when it comes to double-loop learning.

7.2.8 Accessibility of valid information

Many organizations have the tendency to keep sensitive and strategic information flowing within the top hierarchy (Schultz, 2001), and pass down the information only when it has been filtered through that hierarchy's cognitive lens. The filtering of such information inhibits the capability of the organization for double-loop learning. It also creates a variance in the mental models between different levels of hierarchies, and contributes to a culture of compliance and lack of flexibility for organizational change. Any double-loop learning is then seen as being forced by management, and there is greater difficulty in evolving a new shared understanding (Steiner, 1998). Organizational learning benefits from valid (i.e., unfiltered) information being released throughout the hierarchy. Although some dominant coalition mindsets may not readily agree with this view, a greater openness for valid information sharing is taking place in many organizations that are moving towards self managed teams (Barker, 1999). Such information sharing requires the organization to implement effective information capture, and information dissemination, systems. The easier access of valid information gives individuals the opportunity of making informed choices, and produces valid and testable knowledge (Argyris, 2004).

7.2.9 Institutionalizing scanning across industry boundaries

In managing dynamic complexities and uncertainties, managers are inherently short-sighted. Quite often the organization occupies the center of attention with a focus on the incremental improvement of its business (Foster & Kaplan, 2001). Any attempts

to look beyond the immediate boundary of the organization are usually confined to the industry segment. Unfortunately, to the peril of such established organizations, the periphery tends to be ignored. As Day and Schoemaker (2004) state:

> "The periphery is easy to ignore. It is part of the world that does not occupy the centre of attention. It may concern emerging trends in markets that a company serves or, it may be faint stirrings in a part of the world the company barely pays attention. It may be political movement such as the recent anti-globalization protests in Seattle and Rome. A few years ago they seemed to be mere fringe elements, but suddenly they broke into news headlines with high profile, violent demonstrations" (p. 127)

It is therefore essential for organizations to institutionalize boundary spanning, to see beyond their boundaries to peripheral areas, where the next opportunity or the next threatening competitor lurks (Day & Schoemaker, 2004). The institutionalization of boundary spanning can take different forms, such as cross industry visits, inviting speakers and consultants from different industry segments, collaborating with researchers in new areas of technology, effectively engaging with critical stakeholders such as customers and suppliers, and even recruiting and inducting new members having cross industry experience. This prevents organizations suffering from the so called red queen syndrome (see section 3.2.5 in Chapter 3).

However, Day and Schoemaker (2004) cautions about the possible information overload that arises from active boundary spanning. It requires the individual to shift through a myriad of information, and then interpret using the mental models that are often constrained by current industry beliefs and assumptions. However, such mental

model constraints can be overcome by having individuals who have the ability of critical self reflexivity (see section 7.2.1 above), where the individual is able to detach themselves from the current beliefs of the organization and have sufficient emotional resources to create a completely new identity for the organization (Brown & Starkey, 2000). An example of this is the radical re-orientation of Kimberly-Clark (in the 1970's). This was led by an unassuming in-house company lawyer, who was able to stay detached from the cherished view of being a mill based organization, and recreated a new identity for Kimberly-Clark by selling its mills and re-orientating the company towards the consumer business (Collins, 2005).

It is therefore important to utilize such individuals to search for new information in the periphery. When this is coupled with constructive contradictions in the organization (see section 7.2.2), it facilitates the movement of the individuals cognitions to the discomfort zone (Oswick et al., 2002) and towards double-loop learning.

Therefore, as one would appreciate, active and effective boundary spanning is not easy, but neglecting such an important intervention can be disastrous for the organization in the longer term. For example, consider the case of Encyclopedia Britannica. Their business was virtually destroyed when they continued to make expensive hard bound copies, ignoring the threat of CDs and the possibility of cheaper electronic versions.

The nine interventions described, that affects the levels of learning as illustrated in Figure 7.1, is set out linearly and appears to be prescriptive. However, there certainly exist dynamic interactions between these interventions making it possible to assume that certain interventions need to be implemented prior to the implementation of others. For example, for the intervention of identifying, developing, and dispersing double-loop mastery to be successful, an open culture and strategic support from leadership are crucial. Therefore, the interventions of enabling constructive contradictions and ambidextrous leadership can be considered as pre-requisites. However, to develop a practical and workable implementation plan is out of the scope of this thesis. A general guidance and direction for doing this is set out as a further work in Chapter 8 (see Section 8.4.3).

7.3 New Orientations of a Learning Organization

In this section, I argue that the implementation of these nine organizational interventions gives rise to new orientations of a learning organization. What interventions (or combination of interventions) that gives rise to these five new orientations is illustrated in Figure 7.1 above. The five main orientations are: genetic diversity, organizational ideology, organizational dualism, organizational coupling, and strategic play.

7.3.1 Genetic diversity

Genetic Diversity, a term which I coin in this thesis, reflects an organization that is not deeply imprinted with their beliefs and assumptions. Such an organization has individuals possessing double-loop mastery dispersed among critical activities in the organization. Such individuals are capable of holding alternate views of their organization, and bringing in a diversity of views about fundamental beliefs of the organization. Such diversity is maintained by creating an environment that encourages constructive contradictions, effectively manages conflicts that may arise, and institutionalizes scanning into peripheral areas.

7.3.2 Organizational ideology

A learning organization must be characterized by a core ideology. This core ideology, reflected in the superordinate identity of the organization, binds membership together whilst maintaining multiplicity of identities and views. It provides an overriding stability in the midst of the genetic diversity, which characterizes a learning organization. It gives a strong sense of spiritual affinity to the organization, making individuals expend energy in the face of job insecurity and in working towards the collective goals of the organization, even if they are incompatible with individual goals.

7.3.3 Organizational dualism

Double-loop learning, so invaluable to an organization in an environment of rapid change, requires positive engagement with individuals' negative emotions. This positive engagement reflects the feminine side of the organization (Brown & Starkey, 2000). However, such feminism must be balanced by the more masculine characteristic of a strong alignment to a core ideology and purpose. This balance reflects the new orientation of an organization that learns; that of organizational dualism.

7.3.4 Organizational coupling

An organization that learns well must be characterized by strong couplings between the hierarchies in the organization. Such coupling is achieved by ambidextrous leadership and a greater sharing of valid information. When leadership is able to reach all levels of the hierarchy, the leaders are perceived to be aligned with the salient characteristics of the groups that exist within the hierarchies (Ellemers et al., 2004). This results in a greater coupling of the leadership with the wider organization, reducing the mental model variance between them. Similarly, a greater sharing of valid information ensures that all parties understand the need for any double-loop learning, again minimizing the mental model variance. Such organizational coupling is required for a more flexible and faster responsive organization.

7.3.5 Strategic play

Strategic play must characterize a learning organization, especially when it comes to double-loop learning. This means strategic support for continuous experimentation with new options, and ensuring the development, in the minds of its membership, of an identity as a creative and innovative organization. New options can be innovative product development, or even an alternative form of organizational design that have strategic impact. Such strategic play serves to challenge existing belief systems and facilitates experimentation with new identities (Brown & Starkey, 2000). The 3M Corporation is an example of an organization characterized by strategic play. Resources and direction is provided for strategic play, whilst the identity of an innovative organization is endemic amongst its membership.

The five orientations of a learning organization, described above, are the outcome of successful implementation and continuance of the nine organizational interventions described previously. These orientations, when analyzed carefully, reflect both stability and instability. This reflects an organization in a quasi-equilibrium state, suitably geared to handle exploration-exploitation tensions. The discussion thus far opens a new avenue to develop and assess features of the learning organization. Developing a learning organization, especially in the current environment of rapid change, requires an effective implementation of, and continued involvement with, the nine organizational interventions. The five orientations that arise with these nine interventions provide an avenue for measuring or assessing the archetypes of the learning organization. It enables me to develop a new instrument for measuring the

learning organization. However, prior to a more detailed discussion on the development of the measurement instrument, which is dealt with in section 7.6, I describe in the sections to follow the meta-framework used to guide this development, and then present a case for a new measurement instrument for the learning organization.

7.4 A Meta-Framework to Guide the Development of a Measurement Instrument

In this section, I provide a meta-framework for the development of a better performance measure. This meta-framework guides the developer through three thought processes: What is the nature of reality? What are the elements used for constructing the measure? What usefulness and power does this measure provide?

7.4.1 What is the nature of reality

A perspective of the nature of reality helps the developer understand the core concept of what is being measured. It is imperative that the core concept of what is measured be understood (Moilanen, 2001) helping developers come up with a clear, well grounded, and credible, definition of the phenomenon they wish to measure. Garvin (1993) refers to this as providing "meaning" (the first of the three "m," the other two

being "measurement" and "manageable"). This should precede the development of the measuring instrument.

One aspect of this reality involves situations where the phenomenon cannot be reliably measured, as important elements lie in subjective and /or irrational areas. In such situations, it may then be necessary to construct subsets of the phenomenon, which can be more reliably and conclusively measured. See Figure 7.2 below for the logical thought process used to derive the subsets of the phenomenon.
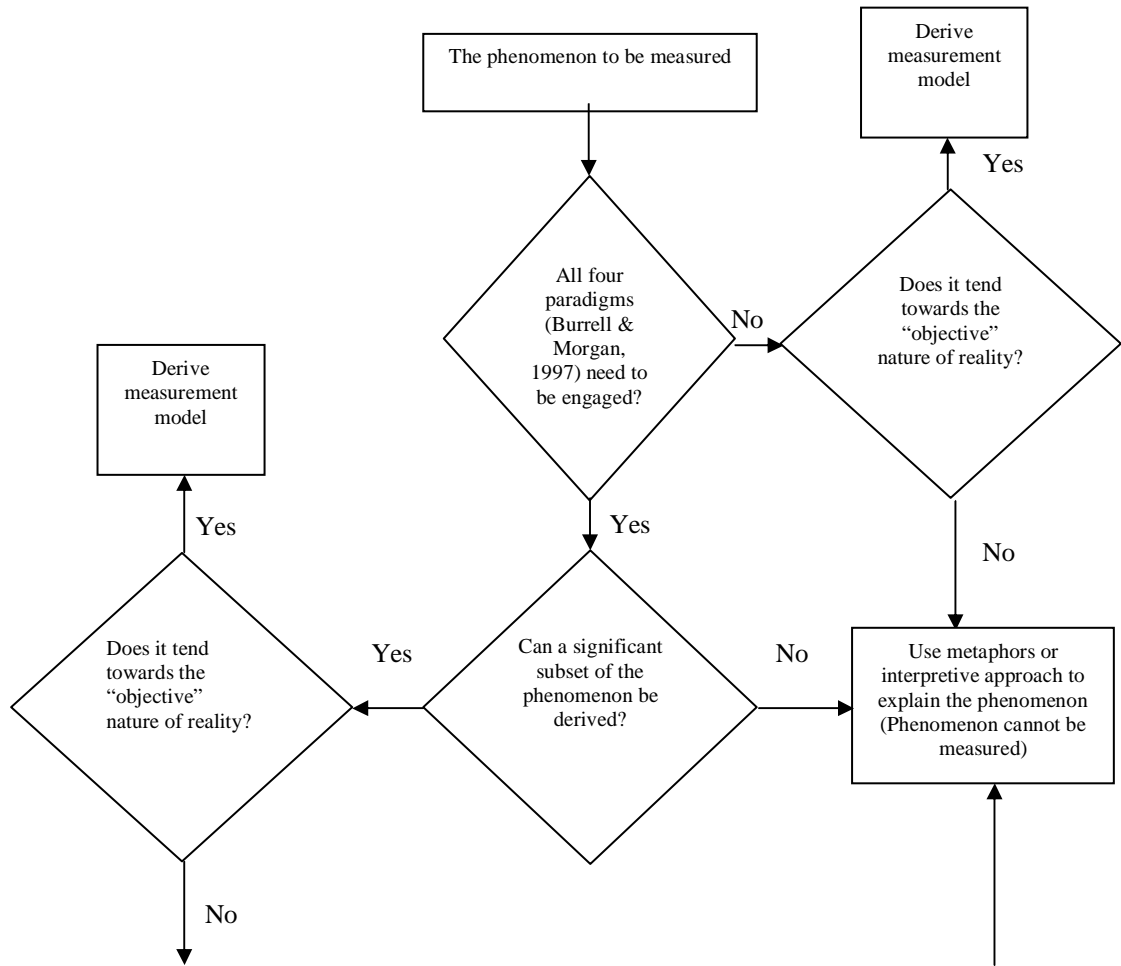
Figure 7.2 – Deriving Subsets of a Phenomenon (Source: *Sun & Scott, 2003b*)

For example, if measuring the learning process is unreliable, one could measure environmental factors that facilitate learning. Although this does not satisfy academic requirements for precision and completeness, it provides an invaluable surrogate tool for a practitioner building a learning organization. This research is another example, where I distilled five main orientations of the learning organization. These orientations, although operating in an environment of rapid change, can be objectively assessed. The approach of building a surrogate measurement tool should be used when the complete phenomenon cannot be explained through direct measurement. It should only be applied if the subset has a significant impact on the phenomenon, and the surrogate tool is seen as clearly adding value.

7.4.2 What are the elements used for constructing the measure?

The elements used to construct the measure must have:

1. "Breadth" – The elements must cover most critical aspects of the phenomenon.
2. "Depth" – The elements must have sufficient depth.
3. "Height" – The elements must have significant impact on the phenomenon.

The "breadth," "depth," and "height," would give the "mass" of the qualitative measure, and I use the analogy of the iceberg to depict this (see Figure 7.3 below). The greater the "breadth," "depth," and "height," the greater would be the mass of the iceberg. The greater the mass, the greater the potential influence of the measure.
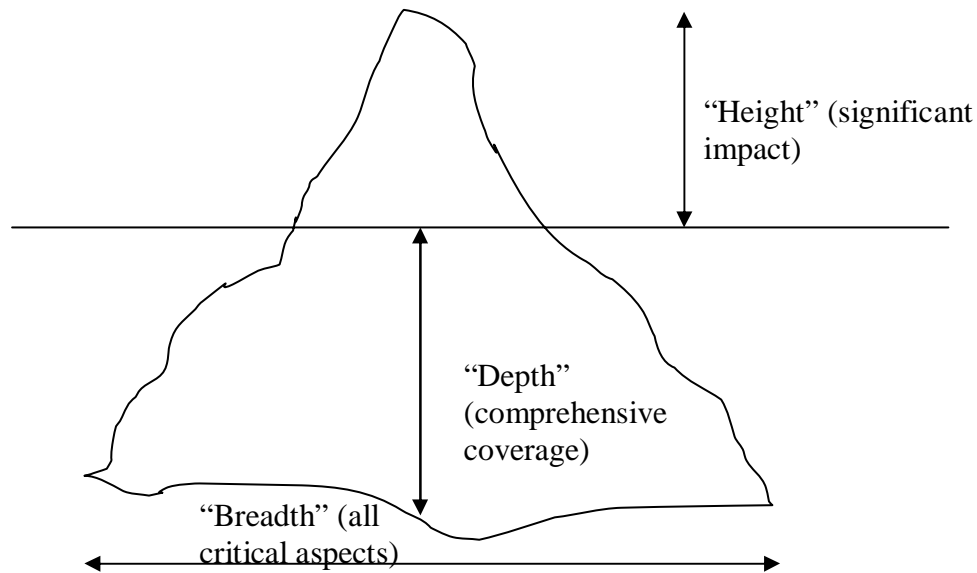
Figure 7.3 – The Ice berg Analogy (Source: *Sun & Scott, 2003b*)

What would be the preferred "breadth: depth: height" ratio for a stable and improved qualitative performance measure? This aspect needs further study to see if there exists a preferred ratio in different contexts. However, in general, I argue that the "breadth: depth" ratio should be low, and the "height: depth" ratio closer to one. This implies that it is crucial for the performance measures to sufficiently cover, as far as possible, the depth of the phenomenon. If complexity sets in, it is better to sacrifice "breadth" than "depth." The elements chosen must also have significant impact on the phenomenon, and this is as important as the "depth" of the measure. This makes qualitative performance measures valuable in the practical settings of the organization.

7.4.3 What usefulness and power does this measure provide?

The measure must be powerful in a practical setting. It should provide practitioners with a measurement tool, which could reliably measure progress, and help in altering behaviors to achieve given objectives. To determine the usefulness and power of the measure, the following four questions that should be raised:

1. Is it an archetype?
2. Can it monitor trends?
3. Is it objective?
4. Is it practical?

The meta-framework is therefore constituted by the three key thought processes, which, when affirmed positively, would provide a reliable and powerful qualitative performance measure.

7.5 Why Do We Need Another Learning Organization Measurement Instrument?

Literature documents for us many learning organization measurement instruments. Would it, therefore, add value by developing another instrument? Yes it does, as the many instruments currently available are deficient when reviewed using the key

thought processes outlined above. I applied the meta-framework to 10 existing learning organization measurement instruments, and will describe the outcome under each of the three key thought processes (for a brief overview of the ten instruments, see Appendix 9).

7.5.1 Applying the thought process "What is the nature of reality?"

When I examined the many definition characteristics of the learning organization in the extant literature, I can broadly classify them into two categories:

Category1: *A learning organization does not occur naturally and requires effort, resulting in changes in behavior of the organization.* An organization must have some degree of adaptive or single-loop learning (where the beliefs and assumptions remain intact), and first order error detection and correction (where the symptoms are treated and not the root cause) for its survival (at least in the short term). This is termed a natural process in the organization. However, double-loop learning (where the beliefs and assumptions are questioned and changed), and second order error detection and correction (where the root causes are eliminated), are what characterize learning organizations. These require effort (see sections 2.2.2 and 2.2.3).

Category 2: *A learning organization is a form of organization* and is often referred to as a noun. Throughout the journey of building a learning

organization, the organization can reflect several orientations or archetypes.

In category 1, a learning organization is considered to be one that has progressed beyond the natural state of learning and now requires effort. Such organizations move beyond single-loop learning and single-order problem solving, to higher order learning and problem solving. Some of the researchers that have embraced this definition characteristic of a learning organization are Dodgson (1993), Garvin (1993), Reynolds and Ablett (1998), Senge (1990), and Smith (1999). Measurement instruments based on this definition characteristic would face the possibility of having multi-dimensional and irrational elements affecting their reliability, due to the direct link to the socio-psychological learning processes.

The category 2 definitions consider a learning organization as a form, or type, of organization. Tsang (1997) states: "learning organization refers to a particular type of organization in and of itself" (p. 75). Examples of forms of learning organizations are: Boundaryless organizations (Ashkenas, Ulrich, Jick, & Herr, 1995); Peak performing organization (Gilson, Pratt, Roberts, & Weymes, 2000); Knowledge-intensive organizations (Örtenblad, 2001); and Healthy organizations (Örtenblad, 2001). This approach views the organizational form as a measure of the learning organization. The characteristics or dimensions of the organizational form are directly observable and hence can be objectively measured. However, these observable dimensions must cover sufficient "breadth," "depth," and "height" – to be elaborated later.

The two categories, described above, can also be explained using physical science uncertainty principles. Chaos theory uses sets of nonlinear equations to describe the bulk of the living and non-living systems in the universe. The fundamental or individual particles of these systems are chaotic, and their movements are uncertain and random. However, the chaotic movements never exceed finite boundaries, which are described as attractor systems, and the system is said to be in bounded instability.

The category 1 and 2 definition characteristics of the learning organization can be described using the above uncertainty principles. Category 1 is similar to the individual or fundamental particles, occurring randomly. The learning processes are uncertain and at times irrational. This uncertainty suggests that the fundamental level measurement of learning processes can be seriously flawed (Palmer & Parker, 2001).

The category 2 definition of the learning organization is when one steps back from the individual level, and sees a nonlinear order. This is where the system is in a state of bounded instability (Palmer & Parker, 2001). The learning organization can be thus described as the finite boundary, encompassing the randomness of the learning processes. At this aggregate level, the phenomenon is more objective and observable. Palmer and Parker (2001) suggest that aggregate measurement is far more useful than attempts to measure at an individual level.

I examined the definition characteristics of ten measurement instruments and placed them either under category 1 or 2. The placement depended on the measurement objective of the instrument. Therefore, this placement is purely my individual judgment.

The measurement instruments either embraced one of the above categories, or a subset of the phenomenon was measured - for example, Hall's (2001) model considers a subset of the phenomenon. A summary of the instruments evaluated under this thought process is shown in Table 7.0 below.

Table 7.0 – The Nature of Reality of the Measurement Instruments

Instruments	Objective of the instrument	Definition characteristics categories	Can it be realistically measured?
Drew and Smith (1995)	Measures the extent of change readiness.	Category 1	No
Benoit and Mackenzie (1994)	Measures the four key learning processes (evolution of theory-in-use, implementing the theory-in-use, developing deployable technologies, and applying deployable technologies)	Category 1	No
Orlando, Geroy, and Wright (2000)	Considers five learning predictors as a measure of learning organization. The objective is to determine the significant predictor in a given organization.	Category 1	No
Lindley and Wheeler (2001)	Considers four inter-linked domains that foster development of learning. The objective is to develop learning capabilities of the organization.	Category 1	No
Moilanen (2001)	Considers five elements of the learning process at individual and organizational levels. The objective is to improve the learning process.	Category 1	No
Crossan and Hulland (1995)	Considers learning at the individual, group, and organizational levels and the interaction of these levels. The objective is to measure the level of tension in the learning process.	Category 1	No
Hall (2001)	Measuring and developing values that govern the learning relationships	Subset of the phenomenon	Yes
Tosey and Smith (1999)	Organizational learning is considered as an energy flow. The manifestation of these energy flows is measured.	Category 2	Yes
Claire, Harrison, Burgoyne, and Blantern (1996)	Considers eleven learning organization characteristics. The objective is to measure these eleven characteristics.	Category 2	Yes
Mikkelsen and Gronhaug (1999)	Distilled seven dimensions of the learning organization climate and measures the learning climate.	Category 2	Yes

Source: *Sun and Scott (2003b)*

The majority of the measurement instruments (six out of ten) embraced the category 1 definition characteristics of the learning organization. Drew and Smith (1995)

measure the change readiness of the organization. Benoit and Mackenzie (1994) consider the learning organization as a measure of four key learning processes. Orlando et al. (2000) looks at five learning predictors that enable an organization to continuously transform itself. Lindley and Wheeler (2001) consider four inter-linked domains that foster development of learning. Moilanen (2001) considers five elements of the learning process at two levels (i.e., individual and organizational). Crossan and Hulland (1995) are more elaborate, considering three levels of learning (i.e., individuals, group, and organizational) and find that the interaction of these three levels produce nine learning processes. In all of these instruments, some critical subjective elements (e.g., dynamics of social interactions) were not considered sufficiently, and rightly so, as such elements cannot be reliably measured. The category 1 instrument defines the learning organization phenomenon by incorporating subjective elements, and hence the measurement instrument does not reliably and sufficiently measure the intended phenomenon.

Three instruments belong to the category 2 definition characteristics. Tosey and Smith (1999) consider organizational learning as essentially an energy flow that produces seven themes. The objective is to observe and measure the manifestation of the seven themes. Claire et al. (1996) use the eleven learning organizational characteristics to construct their measurement instrument. Mikkelsen and Gronhaug (1999) distilled seven dimensions of the learning organizational climate. The category 2 instruments intend to measure observable elements and hence could be reliably measured.

Hall (2001) measures the embraced values of individuals in the organization. Hall contends that knowledge creates knowledge only when it is shared. For this to effectively take place, individuals must embrace common values (e.g., trust, honesty, and integrity). This approaches the measurement of a learning organization in a different way. As discussed earlier, Hall (2001) considers a subset of the phenomenon that would have a significant impact on the learning organization, to produce a surrogate measurement instrument.

7.5.2 Applying the thought process "What are the elements used for constructing the measure?"

For the elements to sufficiently influence the measure, the "breadth," "depth," and "height" of the elements must be significant. For the learning organization, I have deemed the following elements to define the "breadth," "depth," and "height":

"Breadth" – Would the elements used cover the operational, as well as strategic, areas sufficiently? Would they cover all the critical elements that affect the chosen phenomenon?

"Depth" – Would the elements used encompass all levels of learning in the organization (i.e., individual, group, and organizational)? Individual learning is largely a subconscious process and involves the perception of patterns and possibilities. It is primarily an intuitive process. Group learning takes place when individuals learn as a collective and involves dialogue and inquiry. Organizational

level learning takes place when learning is translated into procedures, systems, and rules in the organization.

"Height" – Would the processes used influence the major types of learning sufficiently (i.e., single-loop and double-loop)?

I applied the above review technique to the 10 measurement instruments. This assessment is shown in Table 7.1 below. In all of these instruments, with the exception of Claire et al. (1996), the inter-organizational level was not considered. The authors have assumed the organization to be an independent entity, not influenced by any strategic partnership. This, however, is an overall weakness seen in most learning organization measurement instruments (especially when one considers its application in the current and future business environment, where strategic alliances are becoming a growing necessity). I have omitted this aspect in the review as it is outside the scope of this research. However, this aspect needs correcting in new comprehensive measurement instruments in the future.

Table 7.1 – The Elements used to Construct the Measure

Instruments	Elements used	"Breadth"	"Depth"	"Height"
Drew and Smith (1995)	Focus – A clear sense of direction and vision. Will – The willingness of the organization to change. Capability – The wherewithal to change.	No (subjective factors such as social relationships, values etc are not considered sufficiently)	Partial (considers only organizational level)	Partial (Does not consider double-loop learning sufficiently)
Benoit and Mackenzie (1994)	Considers twelve enabling processes that enables the organization to learn and adapt: • Establishes and maintains clear strategic direction. • Defining and updating the organizational logic • Ensuring best decision making • Adapting to ensure position clarity • Ensuring systematic planning that is workable, involved, and understood. • Integrating associate selection, development, and flow with the strategic direction. • Nurturing and rewarding opportunistic and innovative problem solving. • Ensuring healthy problem solving throughout the organization. • Setting tough and realistic performance standards. • Operating equitable and effective reward system. • Ensuring compatibility of interests. Encouraging and rewarding ethical behavior.	No (the impact of social relationships, leadership behavior etc are not sufficiently considered)	Partial (considers mostly organizational level)	Partial (most learning types are considered in the model. However, the impact of double-loop learning was insufficiently considered)
Orlando et al. (2000)	Five learning predictors to enable an organization to continuously transform itself: • Training and education • Rewards and recognition • Information flow • Vision and strategy • Individual and team development.	No (does not sufficiently consider the learning climate, systems and structures)	Partial (Does not consider organizational and inter-organizational levels)	No (the impact on the learning types are insufficient).
Lindley and Wheeler (2001)	Four interlinked domains that foster the development of learning: • Multi-dimensional goals • Shared vision • Continual learning • Using tacit knowledge	No (The learning climate is not sufficiently addressed. The social relationships, emotions etc that affect learning are neglected)	No (the levels of learning are not made clear)	No (the learning types are not sufficiently considered)

Source: *Sun and Scott (2003b)*

Table 7.1 – The Elements used to Construct the Measure (Continued)

Instruments	Elements used	"Breadth"	"Depth"	"Height"
Moilanen (2001)	Five elements are considered at two levels (i.e. the individual and organizational levels): • Managing and leading as driving forces • Finding purpose • Questioning • Empowering • Evaluating learning and learning organization	Partial (subjective factors such as social relationships, values etc are not considered sufficiently)	Yes (Inter-organizational level is not considered)	Yes
Crossan and Hulland (1995)	Considers three levels in the organization (i.e. individuals, groups, and organizational) and the interaction and transfer of learning between levels.	Partial (the softer side like emotions, relationships etc are not considered sufficiently)	Yes (Inter-organizational level is not considered)	Yes
Hall (2001)	Measures the values that govern the learning relationship. There are 125 values considered (available at www.valuestech.com)	Yes (covers most critical elements for the phenomenon)	No (only considers group and individual level)	No (does not sufficiently cover the impact on learning types)
Tosey and Smith (1999)	Organizational learning is considered as energy flow. The objective is to measure the manifestation or themes. There are seven themes: 1. Existence 2. Community 3. Inspiration 4. Activity 5. Meaning 6. Control 7. Integration	Yes	Yes (Inter-organizational level is not considered)	No (Does not consider any learning types)
Claire et al. (1996)	Considers eleven characteristics of the learning organization: 1. Learning approach to strategy. 2. Enabling structures. 3. Participative policy making. 4. Boundary workers as environmental scanners. 5. Informating. 6. Inter-company learning. 7. Formative accounting and control. 8. Learning climate. 9. Internal exchanges 10. Reward flexibility 11. Self development for all	Yes	Yes	Partial (double-loop is not considered sufficiently)
Mikkelsen and Gronhaug (1999)	Seven dimensions of the learning climate as a measure of learning organization were derived: • Management relations and style • Time • Autonomy and responsibility • Team style • Opportunity to develop • Guidelines on how to do the job • Contentedness	No (Important processes such as learning climate, openness, vision etc were not considered)	Partial (Organizational and inter-organizational levels were not considered)	No (no clear impact on learning types)

Source: *Sun and Scott (2003b)*

"Breadth": For obvious reasons, instruments that fall under category 1 definition characteristics did not have some critical subjective elements. These elements, like emotions and social relationships at work, dwell on the softer side of the organization. The instruments that reflected this weakness are Orlando et al. (2000), Lindley and Wheeler (2001), and Benoit and Mackenzie (1994). Whilst Moilanen (2001), and Crossan and Hulland (1995), satisfied this requirement partially.

"Depth": Moilanen (2001), Crossan and Hulland (1995), Tosey and Smith (1999), and Claire et al. (1996) covered this aspect quite comprehensively. Drew and Smith (1995), and Benoit and Mackenzie (1994), considered mostly the organizational level of learning, whilst individual and group learning were insufficiently covered. Orlando et al. (2000), and Mikkelsen and Gronhaug (1999), neglected the organizational level of learning. Lindley and Wheeler (2001), and Hall (2001), did not cover the levels of learning sufficiently.

"Height": Two instruments, Crossan and Hulland (1995), and Moilanen (2001), had processes that had some impact on all the learning types. Other instruments were deficient, as they do not cover the learning types sufficiently.

7.5.3 Applying the thought process "What usefulness and power does this measure provide?"

The four questions, stated in section 7.4.3, determine the usefulness and power of these measures in a practical environment. I applied these questions to the ten measurement instruments. A summary of the instruments evaluated under this thought process is shown in Table 7.2 below.

Table 7.2 – The Usefulness and Power the Measurement Provide

Instruments	Archetype?	Monitor trends?	Objective?	Practical?
Drew and Smith (1995)	No	Yes	Yes	No
Benoit and Mackenzie (1994)	No	Yes	Yes	No
Orlando et al. (2000)	No	No	Yes	Yes
Lindley and Wheeler (2001)	No	Yes	Yes (partial)	Yes (partial)
Moilanen (2001)	Yes (illustrated as a diamond)	Yes	Yes (partial)	Yes
Crossan and Hulland (1995)	No	Yes	No	No
Hall (2001)	Yes (Partial)	Yes	Yes	No
Tosey and Smith (1999)	No	Yes	Yes	Yes (partial)
Claire et al. (1996)	No	Yes	Yes	Yes
Mikkelsen and Gronhaug (1999)	No	Yes	Yes	No

Source: *Sun and Scott (2003b)*

Archetype: The archetype reflects, often diagrammatically, the form of the learning organization and is thus an important positional measure. It provides a visual map of

where you are and shows where you need to be (Appelbaum & Reichart, 1998). Hall (2001) and Moilanen (2001) were the only instruments that partially displayed an archetype of a learning organization. In the example of Hall (2001), when a sufficient number of individuals in the organization (at all levels) are considered in the questionnaire survey, the values that govern relationships could be related to a particular organizational culture type. For example, if the organizational values reflect command and control, the organizational culture type would be bureaucratic.

Monitoring trends: Monitoring of trend is important from a practitioner's point of view. This enables the practitioner to monitor progress and is a good driver of the continuous improvement process. The Orlando et al. (2000) instrument does not monitor trend and is the only exception. Rather, their approach is to determine which learning predictors are significant in a given organizational context. The five learning predictors (training and education, reward and recognition, information flow, vision and strategy, and individual and team development) are the independent variables. They are regressed with the learning organization profile to derive the significant learning predictors.

Objective: The objective of the measure is to clearly communicate the results of the instrument. It should result in communication of progress and should aid effective decision-making (Poage, 2002). For the learning organization objectives, the measure should clearly communicate areas of strengths and weaknesses, and help the organization build competitive advantage. Crossan and Hulland (1995) do not satisfy

this criterion. The practitioner is not given a clear statement of areas of strengths and weaknesses, which need to be inferred from the instrument.

Practicality: The practicality of the instrument lies in its ease of implementation. Certain instruments require the intensive interaction of an expert, as well as large sample sizes, to be considered sufficiently reliable. The practicality of the instruments therefore was an issue noted in the analysis. Drew and Smith (1995), Benoit and Mackenzie (1994), Crossan and Hulland (1995), and to some extent Tosey and Smith (1999), require an expert to further distill areas that need to be addressed. Hall (2001), Mikkelsen and Gronhaug (1999), and to some extent Lindley and Wheeler (2001), require an extensive sample size for the instrument to be statistically valid.

7.6 Development of a New Measurement Instrument to Assess the Five Orientations of a Learning Organization

Analysis of the ten measurement instruments, using the meta-framework, reveals major limitations. There is, therefore, a need to develop a new measurement instrument, based on the meta-framework, which would overcome some of the critical limitations. The new measurement instrument that I developed, for this PhD research, has strengths in the following areas:

1. The instrument measures observable behavior, reflecting the five orientations of the learning organization. It therefore falls under category 2, making the measure more reliable.

2. As illustrated in Figure 7.1, the nine organizational interventions that give rise to these five orientations affect all the levels of learning in the organization, including the societal level. It also affects the strategic flexibility of the organization by strengthening the exploration process, whilst existing, but useful routines, are effectively utilized. The nine organizational interventions enable the major types of learning in the organization: single-loop and double-loop. Therefore, the instrument has sufficient "depth," "breadth," and "height."

3. The five orientations provide a useful archetype for the learning organization. The instrument also enables the monitoring of trends, especially when it is used to review the progress of these five orientations. The fact that these five orientations are directly linked to the nine interventions (see Figure 7.1), makes the instrument objective by suggesting areas where interventions can be strengthened. However, the practicality of the instrument is questionable. It does require a large sample size to provide a statistically valid measure.

7.6.1 Constructing the new measurement instrument

In order to structure the measurement instrument, I deployed the following specific suggestions from Morrel-Samuels (2002):

- I asked questions about observable behavior, rather than thoughts or motives.

- I avoided terms that have strong association (e.g., "strong," "extremely," etc.)

- I included items that can be objectively verified in the organization.

- I kept the sections of the instruments unlabelled.

- For each section, I constructed a similar number of questions, and in some places changed the verdict so that the desired answer is negative.

- I used an odd numbered (7 point) Likert scale. The odd number enables the survey participant to register a neutral score, if so desired. A score of 1 implies that the behavior or practice never occurs in the organization, whilst a score of 7 implies that it always occurs.

I used the insights from the nine organizational interventions (section 7.2.1 to section 7.2.9), and the five orientations that arise (section 7.3.1 to section 7.3.5), to construct the questions in the measurement instrument. Fifty questions in total were constructed, with five questions reflecting the influence of each of the organizational intervention on the five orientations. The questionnaire had a total of nine identifiable dimensions, measuring the five learning organization orientations. The questionnaire structure is shown below.

Orientation 1: Genetic diversity

Dimension 1: Identifying, developing, and dispersing double-loop mastery.

1. Our organization has Innovators who are willing to challenge traditional thinking.

2. Innovative thinkers are spread across the different functional areas.

3. Innovative thinkers are given opportunities to contribute to the strategic decisions of the organization.

4. Innovative thinkers are valued by the organization.

5. The organization seeks to recruit innovative people.

Dimension 2: Enabling constructive contradictions

6. We are NOT aware of how well we perform in our functions when compared with other organizations.

7. Negative feedback that we get from our customers is freely shared with all in the organization.

8. In our organization, criticism of the current systems and procedures is NOT encouraged.

9. In our organization, individuals are encouraged to come up with contradictory points of view.

10. Contradictory ideas are considered when strategic decisions are made.

Dimension 3: Institutionalizing Scanning across Industry Boundaries

11. Our organization has systems in place to help us obtain information from different industries.

12. In our organization, individuals spend time looking for new learning outside of their organization.

13. Cross industry experience is valued by our organization.

14. My organization collaborates with other organizations from different industry segments to share knowledge.

15. We have constant interaction with others who are outside of our industry segment.

Orientation 2: Organizational ideology

Dimension 4: Creating a superordinate identity (a)

16. Our organizational has a core ideology, which is the belief of the organization as to why they exist.

17. As individuals, we embrace the core ideology of the organization.

18. Because of the core ideology of the organization, we expend energy towards the organization even if it's not compatible with our own goals.

19. When changes takes place in the organization, the core ideology of the organization gives meaning to such changes.

20. Management actions do NOT support the core ideology of the organization.

Orientation 3: Organizational dualism

Dimension 4: Creating a superordinate identity (b)

21. The overall direction and goals of the organization are clearly defined and articulated.

22. Our individual goals and objectives are linked to the overall goals and direction of the organization.

23. Management does NOT provide feedback on how we progress in our individual goals and objectives.

24. In our organization, we are able to track the progress of our individual goals and objectives.

25. My organization is a goal orientated (i.e., numbers driven) organization.

Dimension 5: Building emotional intelligence

26. Individual's perspectives are encouraged to surface in group discussions.

27. In a group discussion, individual emotions are allowed to emerge and are positively worked with.

28. In a group discussion, issues that create dissatisfaction and negativity are NOT properly addressed.

29. In group work, efforts are made to understand the culture and politics of the organization.

30. Individuals in a group build effective networks across the organization in order to build support for the work done by the group.

<u>**Orientation 4: Organizational coupling**</u>

Dimension 6: Ambidextrous leadership

31. In our organization, all hierarchies have a shared understanding with management.

32. Managers are accessible to all levels of the hierarchy.

33. In our organization, management can be trusted.

34. Managers effectively engage with the emotions of individuals in the organization.

35. Managers empower individuals to make independent decisions in their work.

Dimension 7: Accessibility of valid information

36. I have confidence in the accuracy of the information that I'm using in the organization.

37. I'm given information that portrays a clear picture of what is happening to the organization as a whole.

38. Sufficient information is provided for me to effectively perform my function.

39. Information IS FILTERED by management before passing down the hierarchies.

40. We have sufficient business understanding to analyze and interpret information.

Orientation 5: Strategic play

Dimension 8: Strategic support for experimentation

41. The organization gives sufficient time and space for individuals to experiment.

42. We have encouragement from our colleagues to come up with innovative ideas.

43. The organization provides resources to experiment with new ideas that challenge conventional thinking.

44. Several "what if" scenarios are looked at when strategic decisions are made.

45. Creativity and experimentation characterizes our organization.

Dimension 9: Promoting 'systems doing'

46. Experimentation with new ideas involves the participation of individuals across the organization.

47. In experimentation, the wider impact on the organization is always considered.

48. We are aware of the experiments that happen in our organization.

49. We gain new insights from experimentations in the organization.

50. We learn from failures in experimentation.

7.6.2 Refining the new measurement instrument

To refine the instrument, I used the widely accepted procedure suggested by Churchill (1979). However, further work needs to be done (elaborated in section 8.4.1 of Chapter 8), to further confirm the Construct Validity of the measurement instrument. I now describe the sampling that was carried out, and the preliminary analysis that was done to refine the instrument.

Sample and procedure

A list of thirty five New Zealand based organizations was selected from the on-line Kompass directory. The organizations I selected satisfied the criteria of largeness

(having over 100 employees), and represented a diverse range of services and manufacturing organizations. I then got a final year honors student to make contact with the Human Resources Managers of all these organizations, explain to them the reason for the survey, and to elicit their support in getting 15 participants (from each organization) to answer the questionnaire. From the thirty five selected organizations, twenty eight were willing to participate in the survey. Table 7.3 shows the list of the 28 organizations. I then sent to each of the twenty eight organizations, a package containing a letter to the Human Resources Manager (see Appendix 10); and fifteen self addressed stamped envelopes, each containing a letter to the participant and the survey questionnaire (see Appendix 11). Therefore, in total, 420 questionnaires were sent out.

However, the response rate was disappointing with a total of 133 completed questionnaires returned. Out of the 133 completed questionnaires, 131 questionnaires were usable representing an overall usable response rate (at the individual participant level) of 30%. At the firm level, I received responses from 20 organizations, representing a response rate of 71%. The highest number of questionnaires I received from an organization was 13 (i.e., 86.7% of the participants responded), whilst the lowest number of questionnaire received was 1 (i.e., only 6.67% of the participants responded).

Table 7.3 – Organizations that Participated in the Survey

Company Name	Year Established	Size	Activities
WEG New Zealand.	1970	110	Engineering design and manufacturing
Sealord Group Ltd.	1974	1600	Harvesting, processing, and marketing sea food
Tower Ltd.	1869	300	Financial and insurance services
W Stevenson & Sons Ltd.	1917	508	Concrete based building products
Lumley General Insurance Ltd.	1920	250	Financial and legal services
Oxygen Business Solutions	2001	240	Business consulting services
PDL Electronics Ltd.	1970	150	Manufacturing of electronic devices
Goldman Sachs JBWere Ltd.	1861	120	Stock broking and Investment Banking
Nuplex Industries Ltd.	1935	200	Manufacturer and distributor of chemical products
British American Tobacco Ltd.	1923	330	Manufacturer and distributor of tobacco products
JA Russell Ltd.	1951	260	Electrical suppliers and contractors
Solid Energy NZ Ltd.	1987	485	Suppliers of coal and energy management services
Foodstuffs (South Island) Ltd.	1988	1031	Grocery/Hardware Merchants
Waste Management NZ Ltd.	1985	872	Waste collection and recycling
Natural Gas Corporation	1967	400	Energy sales and services
Lyttleton Port Company Ltd.	1989	280	Marine Services
Transfield Worley Ltd.	1973	250	Engineering Project management services
Biolab Ltd.	1915	101-250	Supplier of scientific instrumentations
Allied Telesyn Research Ltd.	1987	240	Developing networking solutions
North Power Ltd	1930	500	Design and supplier of electricity distribution networks
Rockgas Ltd.	1934	120	Supplier of LP Gas
PSIS Ltd.	1928	150	Personal Banking services products
Continental Car Services Ltd	1967	300	Dealers in high quality imported cars
Wanganui District Council	n/a	244	Government council services
Juken NZ Ltd.	1979	1044	Manufacture of engineered wood products
Trustpower Ltd.	1920	350	Owns and operates power stations
Farmers Ltd	1909	3300	Owns and operates retail stores
Noel Leeming Group	1973	1300	Owns and operates retail stores

Note: Size is measured by the number of employees

Preliminary analysis

The analysis that I present in this section is only preliminary. It is at the stage, referred to by Churchill (1979) as "Purify the Measure" (p. 68). In this preliminary analysis, the responses to the 50 questions were first analyzed for reliability using Coefficient Alpha. Churchill (1979) suggests that this should be the first measure

done, and precede any exploratory factor analysis. This is considered necessary to remove those garbage items that tend to produce many more dimensions than can be conceptually identified. A sufficient level of Coefficient Alpha, typically greater than 0.70 (Nunnally, 1978), suggests that there is sufficient degree of internal consistency and the items share equally around a common core. Table 7.4 below shows the computed Coefficient Alpha for the nine identifiable dimensions of the instrument, and the item to total correlation for each question measuring the dimension.

As shown in Table 7.4 below, the Coefficient Alpha for "Enabling constructive contradictions" is less than 0.7. Therefore, I eliminated Q6 to improve the internal consistency. Similarly, I eliminated Q25 since the item to total correlation was less than 0.35 (Bontis et al., 2002). With these eliminations, the recomputed Coefficient Alpha for "Enabling constructive contradictions" is 0.6762, and for "Creating a super-ordinate identity (a) + (b)" is 0.9100.

Although, with the elimination of Q6, the Coefficient Alpha for "Enabling constructive contradictions" is still less than 0.7, the difference is only marginal, and can be taken as acceptable for the exploratory factor analysis to be done.

Table 7.4 – Coefficient Alpha for the Nine Dimensions

Dimensions	Coefficient Alpha	Item to Total Correlation
Identifying, developing, and dispersing double-loop mastery	0.8366	Q1 = 0.7790 Q2 = 0.6697 Q3 = 0.8084 Q4 = 0.8472 Q5 = 0.7816
Enabling constructive contradictions	0.5976	**Q6 = 0.4172 *** Q7 = 0.6091 Q8 = 0.6527 Q9 = 0.7490 Q10 = 0.6905
Institutionalizing scanning across industry boundaries	0.8366	Q11 = 0.6970 Q12 = 0.7339 Q13 = 0.7673 Q14 = 0.8731 Q15 = 0.8164
Creating a super-ordinate identity (a) + (b)	0.8881	Q16 = 0.8447 Q17 = 0.8651 Q18 = 0.7822 Q19 = 0.8184 Q20 = 0.6910 Q21 = 0.8101 Q22 = 0.7969 Q23 = 0.6287 Q24 = 0.5840 **Q25 = 0.1794 ***
Building emotional intelligence	0.7489	Q26 = 0.8271 Q27 = 0.8642 Q28 = 0.6149 Q29 = 0.6430 Q30 = 0.5665
Ambidextrous leadership	0.8173	Q31 = 0.7332 Q32 = 0.6756 Q33 = 0.8192 Q34 = 0.7685 Q35 = 0.8046
Accessibility of valid information	0.8201	Q36 = 0.8527 Q37 = 0.8771 Q38 = 0.8279 Q39 = 0.5988 Q40 = 0.7014
Strategic support for experimentation	0.8873	Q41 = 0.8382 Q42 = 0.7626 Q43 = 0.8954 Q44 = 0.7977 Q45 = 0.8592
Promoting "systems doing"	0.8906	Q46 = 0.8353 Q47 = 0.8363 Q48 = 0.8065 Q49 = 0.8849 Q50 = 0.8162

I then did an exploratory factor analysis, using Alpha Factoring with Varimax orthogonal rotation, for the entire instrument to validate its general coherence. Varimax rotation has been shown to be the best and most common orthogonal rotation procedure (Bontis et al., 2002). Nine clear factors were derived from this exploratory factor analysis, and accounted for 68.94% of the total variance. At this stage, questions which loaded separately on their own factors were eliminated. Table 7.5 shows the outcome of this exploratory factor analysis.

Questions 3, 8, 24, 29, 30, 32, 35, and 39 were eliminated by this exploratory factor analysis process. Therefore, up to this stage, I have eliminated a total of 10 questions (including questions 6 and 25 which were eliminated earlier) from the original instrument of 50 questions.

Table 7.5 – Exploratory Factor Analysis for the Entire Instrument

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Q1						0.76			
Q2						0.63			
Q3						**0.25 ***			
Q4						0.36			
Q5						0.48			
Q7									0.53
Q8									**0.00 ***
Q9									0.28
Q10									0.18
Q11				0.46					
Q12				0.55					
Q13				0.54					
Q14				0.77					
Q15				0.74					
Q16		0.74							
Q17		0.83							
Q18		0.78							
Q19		0.74							
Q20		0.58							
Q21		0.69							
Q22		0.52							
Q23		0.40							
Q24		**0.26 ***							
Q26							0.31		
Q27							0.25		
Q28							0.60		
Q29							**0.01 ***		
Q30							**(0.04) ***		
Q31								0.31	
Q32								**(0.02) ***	
Q33								0.27	
Q34								0.41	
Q35								**0.14 ***	
Q36			0.77						
Q37			0.77						
Q38			0.69						
Q39			**0.21 ***						
Q40			0.60						
Q41	0.62								
Q42	0.56								
Q43	0.78								
Q44	0.43								
Q45	0.65								
Q46					0.44				
Q47					0.62				
Q48					0.57				
Q49					0.74				
Q50					0.48				

Extraction method: Alpha Factoring.   Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 8 iterations.

To further confirm the Content or Face validity of the instrument, I did factor analysis separately for each of the five learning organization orientations of Genetic diversity, Organizational ideology, Organizational dualism, Organizational coupling, and Strategic play (after eliminating the 10 questions). Since Organizational ideology and Organizational dualism share the same dimension, I combined these two orientations in the factor analysis. The separate factor analysis came up with consistent number of factors showing sufficient Content or Face validity of the instruments. Table 7.6 shows the results of the separate factor analysis done for the learning organization orientations.

However, this factor analysis showed certain questions that loaded uniquely on a separate factor, or had high cross loading. These questions were discarded (i.e., Questions 4, 7, 20, 21, and 44).

Table 7.6 – Results of the Factor Analysis Done Separately for the Orientations

	Genetic Diversity	Organizational Ideology and Dualism	Organizational Coupling	Strategic Play
Q1	0.98			
Q2	0.55			
Q4	**0.42 ***			
Q5	0.46			
Q7	**0.26 ***			
Q9	0.73			
Q10	0.75			
Q11	0.54			
Q12	0.62			
Q13	0.64			
Q14	0.89			
Q15	0.70			
Q16		0.83		
Q17		0.90		
Q18		0.79		
Q19		0.78		
Q20		**0.57 ***		
Q21		**0.39 ***		
Q22		0.54		
Q23		0.51		
Q26		0.74		
Q27		0.78		
Q28		0.53		
Q31			0.56	
Q33			0.53	
Q34			0.79	
Q36			0.82	
Q37			0.77	
Q38			0.73	
Q40			0.66	
Q41				0.71
Q42				0.62
Q43				0.88
Q44				**0.55 ***
Q45				0.75
Q46				0.62
Q47				0.73
Q48				0.67
Q49				0.84
Q50				0.68

Through the procedures mentioned above, a total of 15 questions had to be eliminated from the original instrument. Therefore, the final structure of the instrument, after elimination of the 15 questions, is shown in Table 7.7 below.

Table 7.7 – Final Structure of the Instrument

Learning Organization Orientations	Final Set of Questions
Genetic Diversity	Identifying, developing, and dispersing double-loop mastery (Q1, Q2, Q5) Enabling constructive contradictions (Q9, Q10) Institutionalizing scanning across industry boundaries (Q11, Q12, Q13, Q14, Q15)
Organizational Ideology	Creating a super-ordinate identity (a) (Q16, Q17, Q18, Q19)
Organizational Dualism	Creating a super-ordinate identity (b) (Q22, Q23) Building emotional intelligence (Q26, Q27, Q28)
Organizational Coupling	Ambidextrous leadership (Q31, Q33, Q34) Accessibility of valid information (Q36, Q37, Q38, Q40)
Strategic Play	Strategic support for experimentation (Q41, Q42, Q43, Q45) Promoting "systems doing" (Q46, Q47, Q48, Q49, Q50)

Several conclusions can be drawn from this preliminary analysis. Firstly, a high

Coefficient Alpha obtained for all the nine dimensions (greater than or equal to 0.7),

and the dimensions identified at the overall instrument level and at the learning

organizational orientation level, shows that the instrument has sufficient Face or

Content validity. However, as stated earlier and reiterated again, this refinement is

only very preliminary and results should be interpreted with some degree of caution.

With the discarding of certain questions, certain dimensions have only two or three

questions to measure them. Clearly, additional questions need to be identified,

included, and re-tested. I had originally planned to add more questions to the

instrument prior to the sampling process. However, with the increasing number of questions, one introduces more response errors and lowers the response rate from the participants. For these reasons, I decided to go ahead with the original instrument of 50 questions. Finally, while the Content validity appears to be adequate, I have not properly assessed the Discriminant or the Nomological validity of the retained measures. This is a further work that needs to be done and I elaborate this in Chapter 8.

CHAPTER 8

CONCLUSION AND FURTHER WORK

8.1 Introduction

I started this research journey with an overall objective of finding a **"method for assessing and developing features of a learning organization."** This journey produced five research questions (Q1-Q5), whose answers partially fulfill the requirements of this PhD research. To conclude the thesis, I summarize the specific contribution to knowledge that this research makes, describe the limitations of the research, provide insight for some further work, and end with some closing remarks.

8.2 Summary of Contribution to Knowledge

In each of the chapters (Chapters 2, 3, 5, 6, and 7), I have detailed the contribution to existing knowledge. In conclusion, however, it is appropriate to reiterate and summarize the six primary contributions to knowledge of this PhD research:

1. The theoretical framework, elaborated in Chapter 2, which bridges the streams of organizational learning and the learning organization, makes a

contribution to knowledge. In this theoretical framework (see Figure 2.0), I postulate that the extent of learning transfer from the individual level to the organizational level, resulting in a behavioral change of the organization, determines the gap between the two streams. This learning transfer is hindered by the learning barriers operating at the levels of learning.

2. In Chapter 3, I review the extant literature and synthesize the learning barriers into five key dimensions: intrapersonal, relational, cultural, structural, and societal. This synthesizing into a coherent framework of five dimensions makes a contribution to knowledge.

3. There has been little prior work conducted which investigates the impact of the learning barriers on the levels of learning. I used the Delphi technique to investigate in a holistic manner, the impact of the learning barriers on the levels of learning. This is elaborated in Chapter 3 and a summary of the holistic impact is illustrated in Figure 3.1.

4. A knowledge gap exists in understanding how individuals initiate double-loop change and engage the interfaces at the levels of learning. In confining myself to the book keeping model of cognitive change, I found that individuals transit through four stages when initiating a double-loop change: 'embedded', 'embedded discomfited,' 'scripted,' and 'unscripted.'

5. In Chapter 6, I used Identity and Complexity theories to gain insight into how a new shared understanding develops across the organization in a double-loop change. Investigating this in an outsourcing context, I considered the various distinct social groups in the organization. Taking a single, but in-depth, case study of an organization, I refined Fiol's (2002)

theoretical model. This empirical validation and refinement offers a contribution to knowledge.

6. The insights that I gained from the answers to research questions Q1-Q4 , especially Q3 and Q4, enabled me to suggests nine key organizational interventions necessary to develop a learning organization: identifying, developing, and dispersing double-loop mastery; enabling constructive contradictions; creating a superordinate organizational identity; building emotional intelligence (in individuals and groups); ambidextrous leadership; strategic support for experimentation; promoting 'systems doing'; accessibility of valid information; institutionalizing scanning across industry boundaries. The implementation of these nine organizational interventions produced five new learning organization orientations: genetic diversity, organizational ideology, organizational dualism, organizational coupling, and strategic play. These five new learning organizational orientations best suit the exploration–exploitation tension needed in a current environment of rapid change, and are a contribution to existing knowledge.

8.3 Limitations of the Research

Since the research takes a multiple methodology approach (at the meta-level), I have dedicated separate chapters to answer the pertinent research questions. In each of these chapters, I have described the limitations of the research. However, I would like to re-iterate four significant limitations:

1. When the Delphi technique was employed to investigate the influence of the learning barriers at the levels of learning, only the primary path of learning transfer was considered. The other non primary paths of transfer were not considered but may have an influence on the primary path. This needs consideration in future investigation.

2. When researching the question Q3, I only considered 7 individual cases who have initiated double-loop change. Although saturation was reached after 5 cases, there is a need to extend the cases across wider industry segments and in different organizational contexts, before a firm conclusion is reached on the framework elaborating the stages of double-loop change initiation (see Figure 5.3). More specifically, different types of organizational as well as country cultures must be incorporated in future studies.

3. In researching the question Q4, I considered only a single organization and a very specific research context (i.e., outsourcing). Although the results can be generalized, it needs further validation with more case studies covering different organizational contexts.

4. The measurement instrument that was developed is very preliminary. Although the Cronbach Alpha shows acceptable internal consistency of the instrument, and the factor analysis adequately reflects the dimensions of the measurement instrument, the instrument only reflects good face validity. The instrument thus cannot be taken as final, and needs further refinement and validation.

8.4 Further Work

In Chapters 3, 5, and 6, I have described further work, which, particularly in relation to research questions Q2, Q3, and Q4, can be done. Therefore, to avoid repetition, I confine this section to some future work that can be done with the instrument developed. More specifically, I describe five avenues for further research.

8.4.1 Avenue 1

First and foremost, there is a need to further test the instrument using a larger sample size and confirm its Construct Validity (Churchill, 1979; Nunnally, 1978). The Construct Validity suggests that the theoretical concepts underlying the measurement instrument are sound and accurate. To assess the Construct Validity, Nunnally (1978) suggests the need to perform subsequent correlation studies with other theoretical measures:

> ……subsequently performing studies of individual differences and/or controlled experiments to determine the extent to which supposed measures of the construct produce results which are predictable from highly accepted theoretical hypotheses concerning the construct (p. 98)

To do this, three different types of Construct Validity can be measured: Convergent Validity, Discriminant Validity, and Nomological Validity. A Convergent Validity occurs when there is high correlation between different techniques used to measure the same construct. The Discriminant Validity

suggests that the dimensions are indeed unique and not simply a reflection of some other variables (Churchill, 1979). More specifically, the instrument is said to have good Discriminant Validity if it has low correlation with other measures that are not supposed to measure the same construct. Churchill (1979) suggests the use of a Multitrait-Multimethod matrix to assess the Convergent and Discriminant Validity. Such a matrix is a matrix of zero order correlation between different traits (or constructs) when each trait (or construct) is measured using different methods.

The assessment of Convergent and Discriminant validity should suffice to assess the Construct Validity of the instrument (Churchill, 1979). However, if needed, or if necessary, the Nomological Validity can be used instead of/or in addition to, the Discriminant Validity. Nomological Validity occurs when there is a relationship (or correlation) between two measures of conceptually related constructs.

Let me re-iterate the stated limitation of the measurement instrument. Further refinement and validation of the instrument is essential before it can be used. The further work that is described below assumes that the instrument has been sufficiently refined and its Construct Validity is sufficient.

8.4.2 Avenue 2

Work can be done to establish the underlying influence of the five new orientations of the learning organization on the exploration–exploitation tension necessary for strategic renewal. The measure of exploration is the measure of the

feed-forward learning (Crossan & Berdrow, 2003; Crossan et al., 1999), whilst the measure of exploitation is the measure of feedback learning (Crossan & Berdrow, 2003; Crossan et al., 1999). The feed-forward learning involves the socio-psychological processes of intuition, interpretation, integration, and institutionalization. It describes how new learning beginning at the individual level feeds forward into group learning, and finally into the organizational level where it becomes embedded as systems, structures, and procedures. The feedback learning is the exploitation of established and institutionalized learning, and affects the intuition process at the individual level, and interpretation process at the group level. This is illustrated in Figure 4.1.

The five new orientations of the learning organization will effectively facilitate feed-forward learning. Genetic diversity ensures that individuals with critical self reflexivity capabilities are available to question underlying beliefs and assumptions and come up with entrepreneurial intuition. Organizational dualism ensures that negative emotions, often surrounding double-loop learning, are effectively dealt with, facilitating the interpretation and integration process. Organizational ideology ensures that there is greater synergy between the distinct social groups in the organization for a double-loop change, facilitating the integration process. Organizational coupling facilitates the integration process by cutting across barriers created by hierarchies. Strategic play ensures that a new shared understanding develops for the double-loop learning through experimentation. Therefore:

Hypothesis 1: *The five orientations of the learning organization are positively correlated with feed-forward learning, and thereby influence the strategic activity of exploration.*

The five new orientations of the learning organization also facilitate feedback learning, or the strategic activity of exploitation. For example, the masculine side of organizational dualism orientation ensures a strong alignment towards successful routines and practices. Ambidextrous leadership style (especially the transactional style), an essential component of organizational coupling, ensures that productive institutionalized learning is well exploited. Strategic play provides an opportunity to compare the merits/demerits of new learning with institutionalized learning, thereby ensuring that successful routines are preserved and productively exploited. Therefore:

Hypothesis 2: *The five orientations of the learning organization are positively correlated with feedback learning, thereby influences the strategic activity of exploitation.*

8.4.3 Avenue 3

The measurement instrument measures the five orientations of the learning organization and has direct links to the nine interventions. Since, in the previous two hypotheses the five orientations are said to positively correlate with the strategic activities of exploration and exploitation, there should exist a combination of these orientations that support both exploration and exploitation. Maintaining a balance between exploration and exploitation in an organization is

referred to as organizational ambidexterity (Tushman & O'Reilly, 1996), and has

been empirically proven to positively influence organizational performance (He &

Wong, 2004). Therefore:

Hypothesis 3: *There exist organizational orientations, either singularly or*

through dynamic interaction with one another, which effectively support both

exploration and exploitation – i.e., organizational ambidexterity.

If an empirical study can establish the combination of orientations that support

ambidexterity, then the required combination of organizational interventions that

support ambidexterity can be elicited. This would be the base to develop a

practical and workable implementation plan for the nine organizational

interventions.

8.4.4 Avenue 4

The fourth area of further work involves using the instrument to assess the

correlation between the five new orientations of the learning organization and

stocks of knowledge at the individual, group, and organizational level.

Bontis et al. (2002) describe the individual level knowledge stock as the sum of

knowledge residing within the individual level. This can be illustrated as the

diagonal cell (1, 1) in Figure 3.0, and represents a pure process of individual

learning. According to Bontis et al. (2002), the organization's human capital is

the sum of individual-level knowledge stock. Similarly, the group-level

knowledge stock represents a pure group learning process, and is represented by

the diagonal cell (2, 2) in Figure 3.0. The organizational-level learning stock is the sum of all institutionalized learning. It is the sum of all non human store houses of learning such as systems, structures, strategy, procedures and cultures (Bontis et al., 2002), and is represented by the diagonal cell (3, 3) in Figure 3.0. Bontis et al. (2002) shows that knowledge stock at the individual, group, and organizational levels are positively associated with business performance. Similarly, misalignment between the levels of knowledge stocks impede negatively on business performance.

A well established instrument (referred to as Strategic Learning Assessment Map - SLAM), based on the 4I framework of Crossan et al. (1999), is available. SLAM measures the five constructs of feed-forward learning, feedback learning, individual level knowledge stock, group-level knowledge stock, and organizational level knowledge stock (see Bontis & Crossan, 1999). By using a large sample size, across various industries, one can perform a regression analysis of the measures of the five new orientations of the learning organization with the five specific measures that SLAM provides. This will enable testing of hypotheses 1 and 2 (described under section 8.4.2), as well as establishing the correlation between the five orientations and the levels of knowledge stocks.

8.4.5 Avenue 5

Fifthly, I argue, based on hypotheses 1 and 2 (described in section 8.4.2), if the five new orientations of the learning organization are positively correlated with the feed forward and feedback learning, then the five orientations must positively influence business performance. The construct of business performance is not

only financial, but encompasses the continuing satisfaction of customer requirements, fostering a happy and contended workforce, having a secured organizational future, and remaining well respected in the business community (Bontis & Crossan, 1999). Therefore:

Hypothesis 4: *The five orientations of the learning organization are positively correlated with business performance.*

8.5 Closing Comments

The research journey has been difficult, yet invigorating. It has had its highs and lows (probably more lows!). However, the many years of experience I had in various industries stood me in good stead. I was able to quickly relate to specific practical situations, and link theory with practice.

I set out on this journey with the intention of gaining insights that will enable me to be a better practitioner. I have a secondary objective of developing into an academic, sometime in the future, and this research has given me a good appreciation of research methods and tools. To these ends, I believe that the research journey has served the purpose. Have I added to existing knowledge? On paper I claim to do so. However, I defer to the wisdom of King Solomon in the Bible:

"That which has been is what will be. That which is done is what will be done. And there is nothing new under the sun" (Ecclesiastes 1: 9).

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APPENDICES

APPENDIX 1 – List of Barriers from the First Round of Stage 1 Delphi Process

Learning barriers in the transfer from individual to group

1. Personality differences (lack of rapport within individual members)
2. Skills of communication and persuasion
3. Afraid that knowledge may be inadequate or unimpressive
4. Divergent objectives and/or hidden agenda
5. Group confidence in the individual/acceptance of the individual (alienation) or negative perception of the group towards individual
6. Openness to ideas. An environment of learning
7. Individual value system is in variance with Group value system
8. Group norm versus individual beliefs
9. Learning aptitude of group
10. Perceived practicality and the value of learning
11. Fear of loss of ownership, fear of loss of control of knowledge, and fear of loss of individual's competitive edge
12. Past conflicts and behavior of individuals in the group
13. When the individual thinks that his/her contribution would not be given a fair hearing
14. Dissatisfaction in how things work (dejection)
15. Lack of time and work overload
16. Poor performance analysis systems and rewarding systems in work places (therefore no encouragement to transfer ones learning)
17. Negative perception of the group by the individual
18. Strong hierarchical levels in the group (this depends on the organization)
19. Fear of being criticized
20. If the information is sensitive to the Group or affects any member of the group.

Learning barriers in the transfer from group to individual
21. Need to gain acceptance into the group
22. Can the individual be trusted?
23. Openness to ideas
24. Learning aptitude of individual
25. Perceived practicality of learning
26. Group has other aspirations other than knowledge transfer
27. Personal issues (e.g., past conflicts, behavior etc) – temporarily impairing learning ability
28. Persuasion skills
29. Lack of an effective communication methodology
30. Consolidation of group members' perceptions to one message
31. Lack of understanding and knowledge by the individual
32. Lack of time due to work overload
33. History of poor performance by the individual
34. Power play and group pressure
35. The group fears being exposed

APPENDIX 1

Learning barriers in the transfer from group to the organization

36. Org culture and objectives that do not support learning
37. Group benefit maximization Vs organizational benefit maximization
38. Org resource availability to implement/apply learning
39. Bureaucracy/ Red tape
40. Where the idea ranks on the "revolutionary" scale
41. Does not conform to organization's assumptions and beliefs –needs solid rationality and/or testing of new knowledge
42. Worried about reward, recognition, criticism, and punishment (lack of trust)
43. Past experiences of conflicts that arose due to learning transfer
44. Group not adequately recognized within the organization
45. Group seen as a threat to the organization
46. No effective facilitator and methodology to effect such knowledge transfer process
47. Lack of group cohesiveness
48. No time by having to do extra work in this process
49. The fear of "losing the edge" (the perceived power base)
50. Fear of getting the bench mark raised
51. Suspicion of whether other groups are sharing the knowledge the same open way as they are doing (competition with others)
52. Seeing that their knowledge is used by some one else for self gain
53. Lack of support from higher authorities
54. "Silo" mentality in the organization (Results in departments setting their own goals and objectives. Learning that adversely affects these goals are resisted)
55. Lack of information to make good group decisions (this affects learning transfer)
56. Group is used to making decisions on their own and is considered by them as a norm

Learning barriers in the transfer from the organization to the group
57. Group benefit maximization Vs organizational benefit maximization
58. Group value system (e.g., can the group be trusted)
59. Acceptance of the group by the organization
60. Openness to ideas (the extent of learning culture)
61. Learning aptitude of group
62. Perceived practicality and usefulness of learning
63. Availability of resources to implement learning
64. Incorrectly pitched PR campaign (e.g., learning pushed down instead of winning the group over)
65. Past experiences of conflicts that arose due to learning transfer
66. Knowledge may be perceived as a threat
67. No set process to facilitate the knowledge transfer
68. Time spent in the process
69. Diversity of the group/s
70. Understanding individual views/requirements in the group
71. Disruption to status quo
72. The organization wanting to control the group by controlling the information flow.

APPENDIX 1

Learning barriers in the transfer from the organization to the inter-organization

73. Loss of organization's competitive edge
74. Experiences of past behaviors that hampers learning transfer
75. Mutual understanding/trust between the two organizations
76. Openness to ideas
77. Flexibility to change
78. Perceived applicability of learning to the organization
79. Availability of resources to implement learning
80. Incorrectly pitched PR campaign. The need to transfer learning is forced rather than winning over the commitment.
81. Long term viability to the organization.
82. Conflicting cultures and values that exists
83. No common objective among organizations
84. No communication mechanism in place to facilitate the knowledge share
85. Lack of interest in sharing knowledge. This is brought about by the high cost of gathering knowledge and why it should be transferred free.
86. Unwillingness to face raising standards
87. Time constraints
88. Conflicting methods/formulas used in evaluating performance measurements
89. Personality clash between organizations (especially top management).
90. Top management direction that stifles inter-organizational learning.

APPENDIX 2 – Third Round Results of Stage 1 Delphi Process

Results of Round 3 of Delphi Process (Stage 1)

Barriers in the transfer of unique information	Percentage of participants that have listed the elements in the top ten (In Round 3)	
Barriers in the transfer from individual to group		
Personality differences (lack of rapport between individual members)	100%	**Converges**
Skills of communication and persuasion	94%	**Converges**
Group confidence in the individual/acceptance of the individual (alienation) or negative perception of the group towards individual	94%	**Converges**
Individual values is in variance with Group values (e.g. trust, honesty, and integrity etc.)	88%	**Converges**
Divergent objectives and/or hidden agenda	71%	**Converges**
Fear of loss of ownership, fear of loss of control of knowledge, and fear of loss of individual's competitive edge	71%	**Converges**
Openness to ideas. An environment of learning	82%	**Converges**
Afraid that knowledge may be inadequate or unimpressive	71%	**Converges**
Barriers in the transfer from group to individual		
Need to gain acceptance into the group	94%	**Converges**
Can the individual be trusted?	100%	**Converges**
Openness to ideas	100%	**Converges**
Learning aptitude of individual	94%	**Converges**
Group has other aspirations other than knowledge transfer	82%	**Converges**
Lack of an effective communication methodology	94%	**Converges**
Power play and group pressure	76%	**Converges**
Consolidation of group members perceptions to one message	71%	**Converges**
Barriers in the transfer from group to organizational		
Org culture and objectives that do not support learning	100%	**Converges**
Group benefit maximization Vs organizational benefit maximization	100%	**Converges**
Does not conform to organization's assumptions and beliefs - Need solid rationality and/or testing of new knowledge	94%	**Converges**
Worried about reward, recognition, criticism, and punishment (possible lack of trust)	76%	**Converges**
The fear of "losing the edge". The perceived power base	88%	**Converges**
Suspicion of whether other groups are sharing the knowledge the same open way as they are doing. Competition with others	71%	**Converges**
Barriers in the transfer from organizational to group		
Group value system (e.g. can the group be trusted)	100%	**Converges**
Acceptance of the group by the organization	94%	**Converges**
Openness to ideas. The extent of learning culture	94%	**Converges**
Group benefit maximization Vs organizational benefit maximization	100%	**Converges**
Learning aptitude of group	76%	**Converges**
Knowledge may be perceived as a threat	82%	**Converges**
Past experiences of conflicts that arose due to learning transfer	76%	**Converges**
No set process to facilitate the knowledge transfer	76%	**Converges**
Barriers in the transfer from organizational to inter-organizational		
Loss of organization's competitive edge	100%	**Converges**
Mutual understanding/trust between the two organisations	94%	**Converges**
Conflicting cultures and values that exists	100%	**Converges**
No common objective among organizations	88%	**Converges**
Experiences of past behaviors that hampers learning transfer	94%	**Converges**
Personality clash between organizations (especially top management).	88%	**Converges**
Top management direction that stifles inter-organizational learning.	71%	**Converges**
Openness to ideas	82%	**Converges**
Flexibility to change	71%	**Converges**

APPENDIX 3A – Agreed Sources of Learning Barriers When

Transferring From Individual to Group

Individual to Group Sources of Barriers

Critical learning barriers	Sources of barriers
Personality differences (lack of rapport between individual members) You may have difference because of the differences in individual character (e.g. introvert, extrovert etc), or differences in their tastes, preferences etc.	Group relationships Organizational relationships Group climate Group structuring
Skills of communication and persuasion This involves the skills in expressing effectively any thoughts or information in your mind. This may mean that you find it difficult to draw the attention of the group to your point of view.	Group relationships Group climate Group structuring Competencies
Group confidence in the individual/acceptance of the individual (Alienation)/or negative perception of the group towards individual This means that you may find it difficult to gain acceptance into the group. The group having a negative perception of you may cause this.	Group relationships Organizational relationships Group climate Organizational climate
Individual's values are in variance with Group values (e.g., trust, honesty, and integrity etc.) You do not trust the group, or you do not agree with some of the decisions that the group takes, because its honesty and integrity is questionable.	Group relationships Organizational relationships Organizational climate
Divergent objectives and/or hidden agenda You have a hidden objective or agenda in mind that prevents you from transferring learning, which takes priority over the group's objective.	Organizational relationships Group climate Group structuring
Fear of loss of ownership, fear of loss of control of knowledge, and fear of loss of individual's competitive edge You are reluctant to transfer information, as the information constitutes an important component of your knowledge. You feel that your importance to the organization will be undermined if the information is transferred.	Organizational relationship Organizational climate Individual imperative
Openness to ideas. An environment of learning You find it difficult to transfer divergent ideas/thoughts, as the group is reluctant to deviate from a common trend of thought.	Group norms Organizational climate Organizational imperative
Afraid that knowledge may be inadequate or unimpressive You are afraid that the information transferred may display your ignorance or lack of knowledge.	Group climate Group structuring Competencies Organizational climate

APPENDIX 3B – Agreed Sources of Learning Barriers When

Transferring From Group to Individual

Group to Individual Sources of Barriers

Critical learning barriers	Sources of barriers
Need to gain acceptance into the group The individual would have to prove him/herself before we accept him. We are not sure of the individual, so let's wait and see.	Group relationships Organizational relationships Group climate Organizational climate
Can the individual be trusted? Can we really trust him/her with this piece of information? Would he/she use it usefully or create problems by misusing it?	Group relationships Organizational relationships Group climate
Openness to ideas The individual is really set in his/her thinking. It is difficult to get them to accept any new ideas.	Group structuring Competencies Organizational climate
Learning aptitude of individual Is the individual competent enough to handle this new learning?	Group relationships Organizational relationships Group structuring Competencies
Group has other aspirations other than knowledge transfer By passing this piece of information (or not passing this piece of information) to the individual, we can gain some political mileage. OR Let's refrain from passing this information, as it will buckle our other plans	Group relationships Organizational relationships Group structuring Organizational climate
Lack of an effective communication methodology It is difficult for us to keep collecting and analysing these data. Don't the company have a proper system to generate and distribute this information? OR We dot have a proper system to record all what is communicated.	Organizational systems and structures Organizational climate
Power play and group pressure We don't want the individual to have more prominence than us by passing on too much of information. OR he/she is too junior to know this type of information OR he/she is stepping into our areas of responsibilities.	Group relationships Organizational relationships Group structuring Organizational climate
Consolidation of group member's perceptions to one message Lets all agree on this point of view. If we transfer this information, we will end up with another round of debate and argument. OR let's share this information so that we can get agreement from the individual.	Group climate Group structuring Group norm Organizational climate

APPENDIX 3C – Agreed Sources of Learning Barriers When

Transferring From Group to Organization

Group to Organization Sources of Barriers

Critical learning barriers	Sources of barriers
Org culture and objectives that do not support learning The organization is set in its ways. These types of divergent ideas are not encouraged.	Organizational systems and structures. Organizational climate Organizational imperative
Group benefit maximization Vs organizational benefit maximization If we transfer this learning we be will adversely affected, although it is beneficial to the organization (or even vice versa).	Group climate Organizational climate Individual imperative
Does not conform to organization's assumptions and beliefs - Need solid rationality and/or testing of new knowledge This learning does not agree with the way the organization run its business. It goes against the business norms and beliefs of management. We really need to give a good reason why this learning is useful.	Organizational systems and structures. Organizational climate Organizational imperative
Worried about reward, recognition, criticism, and punishment Our contribution to this learning is not recognized in our performance appraisal OR if management does not agree with this learning we will be heavily criticized and it may affect our reward and recognition.	Group climate Organizational systems and structures. Organizational climate
There is fear of "losing the edge". The perceived power base The source of our power is this information. If we tell it to the organization, our clout in this organization will diminish.	Competencies Organizational climate Individual imperative
Suspicion of whether other groups are sharing the knowledge the same open way as we are doing. Competition with others Why are we the only ones who keep on passing our learning to others? Others seem to keep all their information and learning to themselves.	Organizational relationships Group climate Organizational climate

APPENDIX 3D – Agreed Sources of Learning Barriers When

Transferring From Organization to Group

Organization to the Group Sources of Barriers

Critical learning barriers	Sources of barriers
Group value system (e.g. can the group be trusted) Can we really trust this group with this piece of information? Will they use it constructively and with confidence?	Organizational relationships Organizational climate Organizational imperative
Acceptance of the group by the organization This group does not contribute much to the organization; we can really do well without them. OR this group is really causing us problems with their sugegstions and behaviours.	Competencies Organizational climate Organizational imperative
How open is the group to new ideas? The extent of learning culture This group really has a bunch of people set in their ways. They never see things differently nor are they willing to learn.	Group structuring Competencies Organizational climate
Organizational benefit maximization Vs Group benefit maximization How much would it benefit the organization by passing this information to the group?	Organizational systems and structures. Organizational climate Organizational imperative
Learning aptitude of group Does the group have the right skills to handle this type of information and learning?	Group structuring Competencies Organizational climate
Knowledge may be perceived as a threat If this information is passed on to the group for their decision-making, it will place us in a disadvantageous position or expose our weaknesses.	Organizational systems and structures. Organizational climate
Past experiences of conflicts that arose due to learning transfer We really had problems when we transferred some information to the group. They had misinterpreted and misused the information.	Organizational relationships Group structuring Organizational climate
No set process to facilitate the knowledge transfer We have no system in place to help us transfer new information to the relevant groups. It is a tedious process to do it individually to groups and we may miss out on some.	Organizational systems and structures. Organizational climate

APPENDIX 3E – Agreed Sources of Barriers When Transferring

From Organization to Inter-Organization

Organization to Inter-organization Sources of Barriers

Critical learning barriers	Sources of barriers
Loss of organization's competitive edge If we transfer this to the other organization, we will lose our competitive edge and it will disadvantage us.	Organizational imperative Inter-organizational relationships Inter-organizational climate
Mutual understanding/trust between the two organisations We don't really trust the other organization. They might use the information to disadvantage us.	Inter-organizational relationships Inter-organizational climate
Conflicting cultures and values that exists Their culture does not suit us. Their values are different from us.	Organizational climate Inter-organizational climate
No common objective among organizations There are no common goals and objectives between the organizations. We all seem to be having our own agenda.	Inter-organizational climate Inter-organizational systems and structures.
Experiences of past behaviours that hampers learning transfer We were adversely affected when we gave some information the last time. It might happen again.	Inter-organizational relationships Inter-organizational climate
Clash of Personalities between the organizations (especially amongst top management). Don't pass the information to the other organization. There management is not supportive at all towards us.	Inter-organizational relationships Inter-organizational climate
Top management directives stifle inter-organizational learning. I cannot pass this information to the other organization because management has laid down a directive in that regard.	Organizational climate Organizational imperative Inter-organizational relationships Inter-organizational climate
Openness to ideas They are really set in their way of thinking. They will not easily change.	Organizational imperative Inter-organizational imperative
Flexibility to change Their organizational structure and bureaucracy is quite strong making any changes a difficult process. It is not worth for us to spend our effort in transferring this learning.	Organizational imperative Inter-organizational systems and structures. Inter-organizational imperative

APPENDIX 4A – Third Round Results of Stage 2 Delphi Process

(From Individual to Group)

Critical Sources of Individual to Group Learning Barriers

Critical Learning Barriers	Sources of Learning Barriers	Average Rating
Personality differences (lack of support between group members) You may have differences because of the differences in individual character (e.g., introvert, extrovert etc), or differences in tastes, preferences etc.	Group relationships	4.56
	Group climate	4.28
Skills of communication and persuasion This involves the skills in expressing effectively any thoughts or information in your mind. This may mean that you find it difficult to draw the attention of the group to your point of view.	Group climate	4.06
Group confidence in the individual/acceptance of the individual (Alienation)/or negative perception of the group towards individual. This means that you may find it difficult to gain acceptance into the group. The group having a negative perception of you may cause this.	Group climate	4.11
	Organizational climate	4.06
Individual's values are in variance with Group values (e.g., trust, honesty, and integrity etc.) You do not trust the group, or you do not agree with some of the decisions that the group takes, because its honesty and integrity is questionable.	Group relationships	4.17
	Organizational climate	3.83
Fear of loss of ownership, fear of loss of control of knowledge, and fear of loss of individual's competitive edge You are reluctant to transfer information, as the information constitutes an important component of your knowledge. You feel that your importance to the organization will be undermined if the information is transferred.	Individual imperatives	4.11
Openness to ideas. An environment of learning You find it difficult to transfer divergent ideas/thoughts, as the group is reluctant to deviate from a common trend of thought.	Group imperatives	4.11
	Organizational climate	3.78
Afraid that knowledge may be inadequate or unimpressive You are afraid that the information transferred may display your ignorance or lack of knowledge.	Group climate	3.78
	Competencies	4.44

APPENDIX 4B – Third Round Results of Stage 2 Delphi Process

(From Group to Individual)

Critical Sources of Group to Individual Learning Barriers

Critical Learning Barriers	Sources of Learning Barriers	Average Rating
Need to gain acceptance into the group The individual would have to prove him/herself before we accept him. We are not sure of the individual, so let's wait and see.	Group relationships	4.33
	Group climate	4.17
Can the individual be trusted? Can we really trust him/her with this piece of information? Would he/she use it usefully or create problems by misusing it?	Group relationships	4.33
	Group climate	4.44
Openness to ideas The individual is really set in his/her thinking. It is difficult to get them to accept any new ideas	Organizational climate	3.89
Learning aptitude of individual Is the individual competent enough to handle this new learning?	Competencies	4.39
Group has other aspirations other than knowledge transfer By passing this piece of information (or not passing this piece of information) to the individual, we can gain some political mileage. OR Let's refrain from passing this information, as it will buckle our other plans	Organizational climate	4.06
Lack of an effective communication methodology It is difficult for us to keep collecting and analyzing these data. Doesn't the company have a proper system to generate and distribute this information? OR We dot have a proper system to record all what is communicated.	Organization systems and structures	4.33
Power play and group pressure We don't want the individual to have more prominence than us by passing on too much of information. OR he/she is too junior to know this type of information OR he/she is stepping into our areas of responsibilities.	Organizational climate	3.94
Consolidation of group member's perceptions to one message Lets all agree on this point of view. If we transfer this information, we will end up with another round of debate and argument. OR let's share this information so that we can get agreement from the individual.	Group climate	4.29
	Group imperatives	4.06

APPENDIX 4C – Third Round Results of Stage 2 Delphi Process

(From Group to Organization)

Critical Sources of Group to Organizational Learning Barriers

Critical Learning Barriers	Sources of learning Barriers	Average Rating
Org culture and objectives that do not support learning	Organizational systems and structures	3.78
The organization is set in its ways. These types of divergent ideas are not encouraged.	Organizational climate	4.44
Group benefit maximization Vs organizational benefit maximization	Organizational climate	4.22
If we transfer this learning we be will adversely affected, although it is beneficial to the organization (or even vice versa).	Individual imperatives	3.94
Does not conform to organization's assumptions and beliefs - Need solid rationality and/or testing of new knowledge This learning does not agree with the way the organization runs it business. It goes against the business norms and beliefs of management. We really need to give a good reason why this learning is useful.	Organizational climate	3.83
Worried about reward, recognition, criticism, and punishment	Organizational systems and structures	4.33
Our contribution to this learning is not recognized in our performance appraisal OR if management does not agree with this learning we will be heavily criticized	Organizational climate	4.22
and it may affect our reward and recognition.	Group climate	3.78
There is fear of "losing the edge". The perceived power base	Organizational climate	4.00
The source of our power is this information. If we tell it to the organization, our clout in this organization will diminish.	Individual imperatives	4.06
Suspicion of whether other groups are sharing the knowledge the same open way as we are doing. Competition with others	Group climate	4.11
Why are we the only ones who keep on passing our learning to others? Others seem to keep all their information and learning to themselves.	Organizational climate	3.89

APPENDIX 4D – Third Round Results of Stage 2 Delphi Process

(From Organization to Group)

Critical Sources of Organizational to Group Learning Barriers

Critical learning barriers	Sources of learning barriers	Average rating
Group value system (e.g. can the group be trusted) Can we really trust this group with this piece of information? Will they use it constructively and with confidence?	Organizational climate	4.06
	Organizational imperatives	3.94
Acceptance of the group by the organization This group does not contribute much to the organization; we can really do well without them. OR this group is really causing us problems with their suggestions and behaviors.	Competencies	3.89
	Organizational climate	3.83
	Organizational imperatives	3.72
How open is the group to new ideas? The extent of learning culture This group really has a bunch of people set in their ways. They never see things differently nor are they willing to learn.	Organizational climate	3.89
Organizational benefit maximization Vs Group benefit maximization How much would it benefit the organization by passing this information to the group?	Organizational climate	4.17
Learning aptitude of group Does the group have the right skills to handle this type of information and learning?	Competencies	4.33
Knowledge may be perceived as a threat If this information is passed on to the group for their decision-making, it will place us in a disadvantageous position or expose our weaknesses.	Organizational climate	3.94
	Organizational imperatives	4.56
Past experiences of conflicts that arose due to learning transfer We really had problems when we transferred some information to the group. They had misinterpreted and misused the information.	Organizational relationships	4.44
	Organizational climate	3.89
No set process to facilitate the knowledge transfer We have no system in place to help us transfer new information to the relevant groups. It is a tedious process to do it individually to groups and we may miss out on some.	Organizational systems and structures	4.67
	Organizational climate	3.89

APPENDIX 4E – Third Round Results of Stage 2 Delphi Process

(From Organization to Inter-Organization)

Critical Sources of Organizational to Inter-organizational Learning Barriers

Critical learning barriers	Sources of learning barriers	Average rating
Loss of organization's competitive edge If we transfer this to the other organization, we will lose our competitive edge and it will disadvantage us.	Organizational imperatives	4.39
	Inter-organizational relationships	4.39
	Inter-organizational climate	4.61
Mutual understanding/trust between the two organizations We don't really trust the other organization. They might use the information to disadvantage us.	Inter-organizational relationships	4.67
	Inter-organizational climate	4.28
Conflicting cultures and values that exists Their culture does not suit us. Their values are different from us.	Organizational climate	4.00
	Inter-organizational climate	4.72
No common objective among organizations There are no common goals and objectives between the organizations. We all seem to be having our own agenda.	Inter-organizational climate	4.56
	Inter-organizational systems and structures	3.78
Experiences of past behaviors that hampers learning transfer We were adversely affected when we gave some information the last time. It might happen again.	Inter-organizational relationships	4.67
	Inter-organizational climate	4.11
Clash of Personalities between the organizations (especially amongst top management). Don't pass the information to the other organization. There management is not supportive at all towards us.	Inter-organizational relationships	4.72
	Inter-organizational climate	4.00
Top management directives stifle inter-organizational learning. I cannot pass this information to the other organization because management has laid down a directive in that regard.	Organizational climate	3.94
	Organizational imperatives	3.78
	Inter-organizational relationships	4.06
	Inter-organizational climate	4.11
Openness to ideas They are really set in their way of thinking. They will not easily change.	Inter-organizational imperatives	4.67
Flexibility to change Their organizational structure and bureaucracy is quite strong making any changes a difficult process. It is not worth for us to spend our effort in transferring this learning.	Inter-organizational systems and structures	3.83
	Inter-organizational imperatives	4.17

APPENDIX 5 – Incident and Concept Coding from Seven

Interviews

Example of an interview transcript and the identification of incidents with relevant descriptive names:

Peter: Before the radical change, i.e. independent learning into 111, what were your thoughts and feelings about the former practices?

Phase 1

JS: I was comfortable with them …I suppose…*("comfort zone")* and that was the way teaching was done at the University *("scripted behavior")*, and I could work with that *("comfort zone")*. I could deliver a dramatic performance if I needed to *("personal efficiency")*, but I did find it energy draining *("overload")*. It was not something I found natural *("unnatural")*. I suppose it

Phase 2

was that, if anything, that started me to think as to why this wasn't starting to feel like it was something I wanted to continue doing *("uncomfortable")*, because, as I said, it wasn't feeling natural *("unnatural")*. That is what happened…I can do it well *("personal efficiency")*, but it wasn't feeling natural *("unnatural")*. So being a reflective type, I started to think as to why I was having that feeling *("cognitive inquiry")*. Through the experiences, I managed to talk through

Phase 3

("dialogue")… and hence the written summary…and a sense of disquiet about the practices….

("Realization of failure with current practices")

Incident coding

The interview extracts were divided into the four phases (as shown above) and incidents were coded according to these four phases:

Phase 1

1. Comfort zone
2. Scripted behavior
3. Personal efficiency
4. Bench mark due to success

APPENDIX 5

5. Perpetuation of successful practice
6. Neutral attitude
7. Duration of the scripted behavior
8. Attachment to scripted behavior
9. Mental model
10. Failure of previous experimentation
11. Social relationships – cliquey
12. Success with scripted behavior
13. Interest in the subject matter

Phase 2

14. Overload
15. Unnatural
16. Uncomfortable
17. Misaligned interests
18. Inefficiency
19. Variations in existing practices
20. Single-loop learning
21. Escape
22. Constrains of organizational policies
23. Constrains of management preferences
24. Blockage of escape route
25. Underlying threat
26. Unsustainable
27. Changes in the external environment
28. Error prone
29. Lack of competency
30. Penetration of new technology
31. Dissatisfaction
32. Costly process
33. Threat of competition
34. External support for change
35. Knowledge of the existing process
36. Systemic view
37. Attitude of stakeholders
38. Concern for poor image
39. Lack of resources
40. Environmental pressures
41. Untenable past practices
42. Mismatch seen through previous experience
43. Poor performance

APPENDIX 5

Phase 3

44. Cognitive inquiry
45. Dialogue
46. Previous experience
47. Support evidence
48. Conviction by external information
49. Recognizing the need for a radical solution
50. External information gathering
51. Cognitive re-definition
52. Opportunities created by new technology
53. Realization of failure with current practices
54. Decision to change
55. Relational constraints
56. No legitimacy to affect change
57. Sensitivity towards change
58. Lack of competencies
59. Ego of existing board members
60. Prevailing culture
61. Lack of confidence
62. Radical departure from past practices
63. Influence of role model
64. Skepticism by others towards radical change
65. Initial fears
66. Lack of resources
67. Lack of direction

Phase 4

68. Experimentation
69. Success in experimentation
70. Regression due to failure in experimentation
71. Sharing the radical idea
72. Encouragement
73. Credentials
74. Support for change
75. Creating a distinction
76. Safety in experimentation
77. Knowledge sharing
78. Confidence in the radical solution
79. Self confidence
80. Management support
81. Supportive environment
82. Attractiveness of the change
83. Willingness to action the changed mental model
84. Improved efficiency
85. Enhanced value

APPENDIX 5

86. Improved effectiveness
87. Communicating the change
88. Personal vision
89. Clear end objective
90. Generating interests
91. Removal of existing constrains
92. Confidence in the change agent
93. Engaging in dialogue
94. Support from external sources
95. Inter-personal relationships
96. Ability to exert control
97. Gradual introduction of radical change
98. Relishing challenging the existing procedure
99. Organizational support
100.   Acceptance of change
101.   Autonomy
102.   Importance of the subject matter
103.   Seeking external recognition

Grouping of incidents into concepts

Phase 1

Scripted behavior (2, 7, 9)
Success with scripted behavior (4, 5, 12)
Attachment to scripted behavior (1, 3, 8, 10, 11)
Neutral attitude (6)
Interest in the subject matter (13)

Phase 2

Misaligned interests (15, 16, 17, 31, 35, 36, 38)
Variation in existing practices (19, 42)
Inefficiency (14, 18, 28, 32, 43)
Pressures from external environment (25, 27, 30, 33, 34, 37, 40)
Changing requirements (29)
Unsustainable (26, 41)
Lack of resources (39)
Escape as a response (21, 22, 23, 24)
Single loop learning (20)

APPENDIX 5

<u>Phase 3</u>

Recognizing the need for change (44, 49, 53, 54)
Formulation of a radical solution (51, 62)
External factors influencing radical solution (47, 48, 50, 52)
Individual experiences influencing radical solution (45, 46, 63)
Organizational constraints affecting radical solution (55, 56, 57, 59, 60, 64, 66, 67)
Individual constraints affecting radical solution (58, 61, 65)

<u>Phase 4</u>

Individual confidence (72, 73, 78, 79, 98)
Individual's vision (75, 88, 89)
Management support (80, 82, 92, 102)
Organizational support (74, 90, 95, 99, 100)
Psychological safety (76, 81)
Empowerment (96, 101)
Minimization of structural constraints (91)
External support (94, 103)
Experimentation (68, 97)
Expressing the radical solution (71, 77, 83, 87, 93)
Success in Experimentation (69, 85, 84, 86)
Regression (70)

APPENDIX 6 – Frequency of Occurrence of Concept Codes

Phase 1 - Frequency of Occurrence of Concepts

Concepts	JS	NG	JC	AF	ED	EW	SN	Total
Scripted Behavior	1	1	9	2	10	1	2	26
Success with scripted behavior	2	2			1	4		9
Attachment to scripted behavior	2	1	1	3	2	3		12
Interest in the subject matter	2	1	2	1	2	1	1	10
Neutral attitude	1	2			2			5

Phase 2 - Frequency of Occurrence of Concepts

Concepts	JS	NG	JC	AF	ED	EW	SN	Total
Misaligned interests	7	1		1	11	1	1	22
Variations in existing practices		1			2	2		5
Inefficiency	2	2	3	10			2	19
Pressures from external environment		1	1	5	6	2		15
Changing requirements				1		1		2
Unsustainable			2	2		1		5
Lack of resources		1			1			2
Escape as a response			5					5
Single-loop learning		1	1					2

APPENDIX 6

Phase 3 – Frequency of Occurrence of Concepts

Concepts	JS	NG	JC	AF	ED	EW	SN	Total
Recognizing the need for change	1	2		7	2	4	1	17
Formulation of a radical solution	1	1	9	1	2	2	1	17
External factors influencing radical solution	5	4		1	2	1		13
Individual experiences influencing radical solution	4				2	6	1	13
Organizational constraints affecting radical solution					10		4	14
Individual constraints affecting radical solution	1		2		3	3	1	10

Phase 4 – Frequency of Occurrence of Concepts

Concepts	JS	NG	JC	AF	ED	EW	SN	Total
Individual confidence	2	4		2	1	1	4	14
Individual's vision	1	1		3	2	1	2	10
Management Support	1	2	6	1	1	4	1	16
Organizational support	1			3	2	7	1	14
Psychological safety	3	1			1	1		6
Empowerment	1	2				3	2	8
Minimize structural constraints			1		1			2
External support					3	2	3	8
Experimentation	3	1	1	2		1		8
Expressing radical solution	3	3	3	3	5	1	2	20
Success in experimentation	2	1		9	2		1	15
Regression	1	1	1	1			1	5

APPENDIX 7 – Excerpt From an Interview (Gauging Individual's

Identification with Common Attributes)

Excerpts from an interview with a tradesman

Peter: If I talk about Kinleith mill, what does it mean to you then and now?

Dave G: Prior to redundancy?

Peter: Prior and now?

Perpetuity of the identity

Strong emotional attachment to the identity

Dave G: It was always a fun place to come and work in. And at times you had 3 generations of people working or had passed through areas. So it was a great big family, and the town was structured that way …..mm……with redundancy that has stolen a lot of that away because there are people here that are no longer here, and that's just broken that…mm…..that family…..that family unit if you like….. and…..yeah there was…..there was a good feeling in that we…..we actually owned the mill. CHH or whoever…..whoever owned the mill……Elders going away back in the history….they didn't own the mill, we did. Because we run it…….and it's quite an emotional thing for some people.

Strong ownership of identity

Distinctiveness of the identity

Peter: And if you say you own the mill, in what sense do you say it?

Enhances self esteem

Dave G: Well there is always pride in doing what we were doing…and we enjoyed doing because we knew we had somebody on the left and somebody on the right….that was…had….got used to us and…and willing to make things work and also make it a fun day.

APPENDIX 8 – Excerpt From an Interview (Estimation of Level of Coupling and Synergy)

Excerpts from an interview with a middle mngt-ex-CHH (3rd Period)

Peter: So what is the level of engagement the middle managers have with the senior managers right now?

Dave C: Well I think in terms of the amount of face to face contact with them…..I'm having a very small amount of face to face contact with Juergen…..and there's been a little bit of frustration I guess…..but that…..I mean

| Estimated level of coupling = 3 |

Juergen is a very good leader and so everybody is wanting a piece of his time but with all these…..I mean the external issues that he is having to deal with that…that's limiting his time and that has been the case since day 1. That doesn't mean that we are not…how should I put it?.....I guess we are trying to follow through as best as we can but sometimes we are losing a bit of the communication loop because of this…..

| Estimated level of coupling = 4 |

APPENDIX 9 – BRIEF DESCRIPTION OF THE LEARNING ORGANIZATION MEASUREMENT INSTRUMENTS

Title: Values development and learning organization

Publisher: Journal of Knowledge Management, Volume 5, No: 1, 2001, pp. 19-32.

Author(s): Brian P. Hall

Subject area: Measurement and development of values in individuals within the organization.

Related areas: The related area would be leadership development, creation of corporate culture and learning organization.

Processes used for construction: This model is based on the assumption that knowledge creates knowledge only when it is shared. Therefore, underpinning the entire learning process in the organization is relationship. For the relationship to enhance the learning process in the organization, the model assumes that the factor that underpins the relationship is the values of the individual. There must be at least a minimal set of values that must be commonly shared between individuals. The model uses 125 values, which are embedded in the spoken and written language that underpins human behavior (see www.valuestech.com for the set of 125 values). Therefore, the mathematical objective of this model is to measure the individuals and group values. The methodologies for measurements are:

1. "Questionnaire" approach. This approach can be used for individuals and groups. For individuals, a 125-item questionnaire has to be filled along with a 360-degree feedback from peers, subordinates and boss. The result would be a value priority for the individual. The person could then convert the values into specific skill capabilities using the extensive database provided.

2. A similar "Questionnaire" approach is used for groups where individuals in the group would fill a 63-item questionnaire.

3. A "document analysis" approach is also used for an impersonal approach. A 5000+ word Thesaurus is used to scan documents and link synonyms to the 125 values that underpin human behavior. These documents could be annual reports, sales speech, or training materials etc. The outcome of this would give an idea of what values seem to govern the organization as seen in written form in the organization (however, actual values in the organization can be very different from what is written in published documents. This would be a weakness in this approach).

Outcome of the measure: The objectives or outcome of this model could be two fold:

- Individual's could evaluate their values and develop key areas of weaknesses. An assessment of their strength would also be useful for self-development.

- The model suggests four types of organizational culture and each type of organizational culture is dominated by some key individual values. The type of organizational culture would determine the learning organization. The four types of organization culture, their dominating values and the learning process are shown in the table below. This would enable individuals to make an assessment of their values and leadership/learning style and correct any apparent areas of weakness, or develop new values that they do not have. This model assumes that a collective action of most individuals in the organization would propel the organization towards a better organizational culture.

APPENDIX 9

Levels of knowledge management and value priorities

Organizational culture	The dominating values	Learning processes
Top-Down autocratic organization	Self interest, control and security	Transactional: Knowledge is considered as data
Traditional top-down layered organization	Family, competence, self worth and work/labor	Packaged solution: Knowledge as information
Learning organization	Self actualization, service, knowledge/insight	Tailored solution: knowledge as understanding
Collaborative partnering (Global) organization	Knowledge/insight, presence, human dignity, truth/wisdom	Partnering cooperation: knowledge as wisdom

Meaning

- **Is it holistic?** NO

  The model uses only values governing human behavior to determine the
  learning organization. The approach is sufficiently holistic if the primary
  objective would be for individuals and groups value measurement but not
  so if there are related objectives such as measure of learning organization
  and the corporate culture of the organization. The approach used only
  focuses on relational dimension of the organizational culture and ignores
  influencing factors such as organizational structures, technology, external
  market dynamics, vision/meaning etc. Therefore it is not holistic from a
  learning organization and corporate culture point of view.

- **Is it profound?** NO

  If one considers the value measurement it is sufficiently profound. Since
  the tool does not cover sufficient factors of the learning organization and
  culture, the questionnaire does not dwell into all areas. Therefore it is not
  sufficiently profound from a learning organization and culture point of
  view.

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Measurement

- **Is it an archetype?** Yes (Partially)

  If a sufficiently large group survey can be done, then dominating values of the organization can be approximated and hence the type of learning organization and culture can be determined (using table above). However, the process becomes expensive and ambiguous (who would be involved in the survey?).

- **Is it behavioral anchored or environmentally anchored?** Behaviorally anchored. The only focus of this model is in the relational dimension.

- **Can it monitor trends?** Yes (Partially).

  The values of the individual can be surveyed and ranked and the movement of these values can be monitored. It will satisfy the criteria from leadership development point of view. However, it does not satisfy the criteria for the learning organization and culture point of view.

- **Is it tested?** Yes.

  The model has undergone rigid statistical testing over a period of twenty years.

Manageable

- **Is it objective?** Yes

  The areas of strengths and weaknesses of the values (in individuals and groups) can be easily disseminated. It only analyzes from a relational point of view.

- **Is it practical?** No

  From a learning organization and corporate culture point of view it is an expensive and unwieldy process. A large sample has to be obtained (majority of individuals and across every level and function) to properly determine the learning organization and corporate culture point of view.

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Gap in the measure: The knowledge gaps in the model are purely from a learning organization point of view. These gaps are:

- The only constructs in the model considered are values and the relationship points of views. It largely ignores factors such as organization structures, external changes in environment, changes in technology, shared vision etc that has an impact on learning.

- The focus in this research is on individual values. The relationship with organizational values (e.g. honesty, trustworthiness, integrity etc) is not explored. The importance of sharing a common organizational values and the impact on learning has been ignored.

APPENDIX 9

Title: The learning organization: "change proofing" and strategy

Publisher: The learning organization, Volume 2, No: 1, 1995, pp. 4-14.

Author(s): Stephen A.W. Drew and Peter A.C. Smith

Subject area: The learning organization

Related areas: The related areas are change management and organizational learning, i.e. understanding the capacity for the organization to learn and change.

Processes used for construction: The entire objective of this model is to measure the extent of the readiness of the organization for change by considering a learning framework consisting of three elements: i.e., Focus, will, and capability.

Focus: This is defined as a clear sense of direction and vision. Focus is rooted in the shared mental models of the top teams and shared vision throughout the organization. However, too much of focus at the expense of open mindedness can be damaging to the organization where change in the external may not be recognized.

Will: This is the willingness of the organization to change. It may be seen in the organization's culture where there is dissatisfaction with the status quo and a sense of stretching themselves and winning.

Capability: This relates to the core competency of the organization and the capability and freedom of the organization to act, influenced by the stakeholders interests and preferences.

The model is based on a change audit and essentially consists of three steps:

Step 1: The strategic context of the organization is clarified and examined. This involves obtaining information regarding strategies, key issues concerning the decision makers, and the market place activities etc.

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Step 2: Each element of focus, will, and capability, are then examined in relation to the strategic context to determine if the elements are under-developed or over-developed. In this situation, the judgment of the auditor(s) is required.

Step 3: The overall balance between focus, will, and capability are assessed.

Step 4: Key learning disabilities and barriers to change are identified and the strengths and significance of these are analyzed. Internal surveys, interviews and benchmarking are usually used.

Outcome of the measure: The final outcome of the model is to assess the readiness of the organization for change. The key learning disabilities and barriers to change are identified.

Meaning

- **Is it holistic?** Yes

  The model is sufficiently holistic as it covers most aspects of strategy and operational of the organization.

- **Is it profound?** Yes

  This lies to a large extent with the auditors performing the assessment. However, this model requires a fairly in depth analysis of the situation in the organization to make proper assessment of its change readiness

Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization. There is no visual map to communicate the result of the model.

- **Is it behavioral anchored or environmentally anchored?**

  Environmentally anchored. This model does not look at the individual's change readiness but for the organization as a whole. This is done by analyzing the environment

around the organization and making an assessment of the extent of over/under development of focus, will and capability.

- **Can it monitor trends?** No.

   The model is not primarily mathematical based and does not produce values that can be monitored over time.

- **Is it tested?** No.

   The model is not mathematically based but primarily judgmental by the assessors.

Manageable

- **Is it objective?** Yes

   The areas of strengths and weaknesses in the areas of learning and change are the end result.

- **Is it practical?** No

   The model is tedious to carry out and it can cause an overload or stress on management. The model will derive the greatest benefit if management is open and honest in their feedback. However, the "change proofing" approach can be wrongly (or dishonestly) used (by management) to justify the current situation of the organization.

Gap in the measure:

Some of the identifiable gaps in the measure are:

1. The debilitating effect on change and learning due to poor structures in the organization are not sufficiently considered.

2. The model is an assessment of the organization and not of the individual. For an organization to change, it is the individual who needs to change first and not the organization. The organization can only provide the right environment (here again impacted by the individuals in the organization – especially the leadership) for this to fertilize.

3. For change to take place there must be an environment of trust, honesty and integrity. These key values are necessary for effective team and individual learning. This is not sufficiently addressed in the model.

APPENDIX 9

<u>**Title: Assessing the learning organization: part 2 – exploring practical assessment approaches (Approach A) – An elaboration of Drew and Smith (1995)**</u>

Note: This article presents two approaches. I will critique these two approaches (i.e. approach A and B) separately.

Publisher: The learning organization, Volume 6, No: 3, 1999, pp. 107-115.

Author(s): Paul Tosey and Peter A.C. Smith

Subject area: The learning organization

Related areas: The related areas are change management and organizational learning, i.e. understanding the capacity for the organization to learn and change.

Processes used for construction: The processes used to construct the model in this approach are a slight variant to the F-W-C model proposed earlier by one of the authors (Drew & Smith, 1995). What appears to be the objective here is to model performance where performance is viewed as being driven by learning organization ideals. The model suggested is mathematically based and is used to monitor current status as well as trends (a weakness in the previous model).

Focus: This is defined as the performance level desired and set.

Will: This is the willingness or the intent to action the change.

Capability: This relates to the wherewithal's available action and implements the desired performance levels.

The model is based on a questionnaire and essentially consists of two steps:

Step 1: A questionnaire is used (Likert scale) and employees are asked to tick off their appreciation of the relevant status of the organization in relation to a comment.

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These questions are related to the 3 fields (focus, will and capability) and additional comments are included to help validate for honesty in response.

Step 2: The analysis is then carried out and typically involves the calculation of mean, mode, median, maximum, minimum, standard deviation etc. and translating these to the three vectors (see figure below).
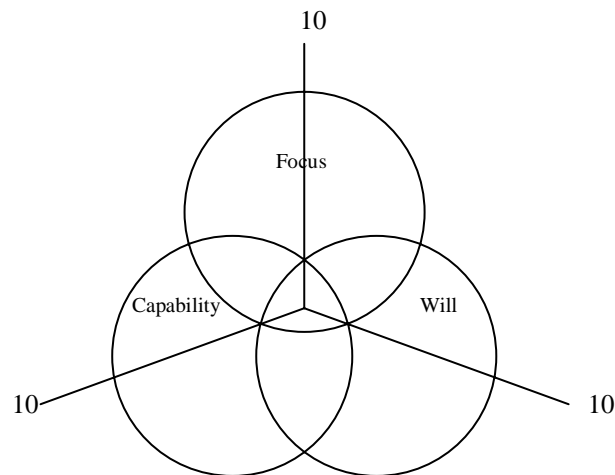
Outcome of the measure: When the three vectors are plotted, the model could easily display (diagrammatically) the imbalance between the three elements (i.e. Focus, will and capability). The model is equally applicable for the individual, clusters or teams as well as the organization. This model has been used extensively in various industries and attempts have been made to correlate the business measures to the outcome of the model. The question of which business measure can be correlated to the elements is still left unanswered.

The original usage of the three fields has been on individual assessment and development and this approach could very well be used for this purpose.

Meaning

- **Is it holistic?** Yes

  The model is sufficiently holistic as it covers most aspects of strategy and operational of the organization.

- **Is it profound?** Yes

  This covers in depth most areas (both "soft" as well as "hard" areas of the organization).

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Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization. There is no visual map to communicate the result of the model.

- **Is it behavioral anchored or environmentally anchored?**

  Environmentally anchored. This is done by analyzing the environment around the organization and making an assessment of the extent of over/under development of focus, will and capability.

- **Can it monitor trends?** YES.

  The model is mathematical based and does produce values that can be monitored over time.

- **Is it tested?** YES.

  The model has been tested over many industries such as Exxon, Canadian imperial bank of commerce, and IKEA.

Manageable

- **Is it objective?** NO

  The areas of imbalance between focus, will and capability are the end result. However, it does not show the degree of assessment details and further analysis (probably with consultant intervention) needs to be done. This would affect the practicality of the model.

- **Is it practical?** No

  The model requires the formation of post-instrument collaborative groups from within the organization to jointly articulate the details and may demand consultant intervention. This is a tedious and time-consuming effort.

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Gap in the measure:

Some of the identifiable gaps in the measure are:

1. The debilitating effect on learning due to poor structures in the organization is not sufficiently considered.

2. For learning to take place there must be an environment of trust, honesty and integrity. These key values are necessary for effective team and individual learning. This is not sufficiently addressed in the model.

3. It is not an archetype and does not provide sufficient objectivity (see reasons above).

Title: Assessing the learning organization: part 2 – exploring practical assessment approaches (Approach B)

Approach B has been suggested as a link up to the model in approach A. Since approach A suffers from objectivity where the assessment is tedious and difficult, approach B has been suggested in relation to approach A. However, the exact linkage of these two approaches is not clear.

Publisher: The learning organization, Volume 6, No: 3, 1999, pp. 107-115.

Author(s): Paul Tosey and Peter A.C. Smith

Subject area: The learning organization

Related areas: The related areas are organizational culture.

Processes used for construction: This model is based on the concept that the organizational dynamics are essentially an energy flow. The view taken in this approach is that the energy is a property of the fields and results from the interactions of the three fields of focus, will, and capability (the exact manner of this is not explained in the literature). The energy flow produces seven themes or states. The authors have reworked the designation of these energy themes (in-line with organizations), as the original use of these themes has been to assess relationships. The new energy theme designations and the relevance to the organization are shown in the table below:

Old designation	New designation	Areas of organizational relevance (examples)
Existence	Existence	Resources, skills, infrastructure
Action	Activity	Excellence, enthusiasm, results orientation
Order	Control	Structures, roles, plans, goals
Heart	Community	Relationships, politics, openness, humanism
Truth	Meaning	Values, beliefs, communication
Insight	Integration	System, totality, synergy, wisdom
Spirit	Inspiration	Vision, spirit, idealism, service

The model is based on a questionnaire and essentially measures the extent of the energy themes in the organization. This model consists of two steps:

Step 1: A questionnaire is used (Likert scale) and employees are asked to tick off their appreciation of the relevant status of the organization in relation to a comment. These questions are related to the energy themes and additional comments are included to help validate for honesty in response.

Step 2: The analysis is then carried out and typically involves the calculation of mean, mode, median, maximum, minimum, standard deviation etc. and translating these to the kite diagram whose vectors represent the seven fields or themes (see figure below).
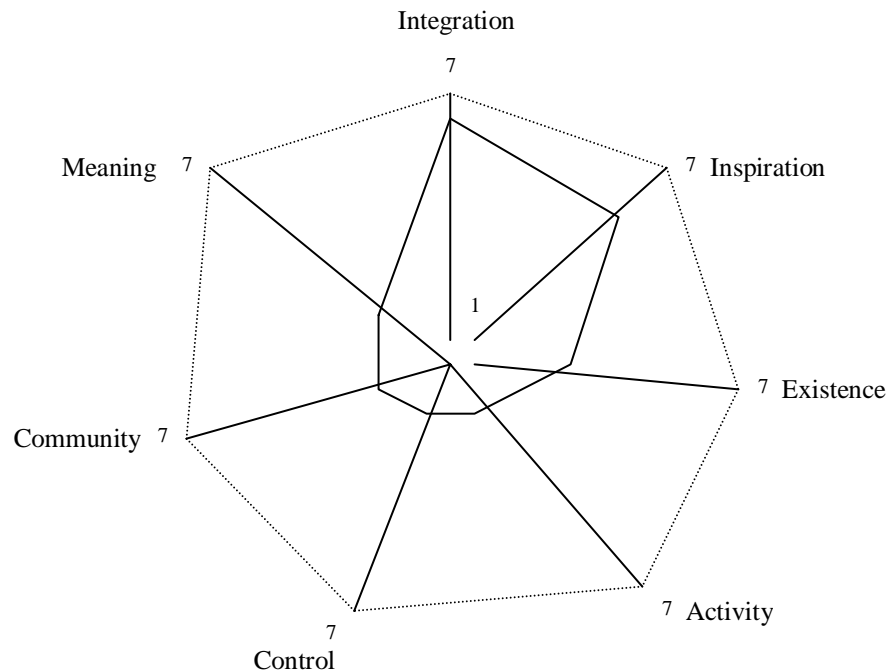
Outcome of the measure: The model is used to assess the strengths/weaknesses of the energy themes in the organization. This overcomes a major weakness in the F/W/C-P model (suggested in approach A), where the assessment after the model is constructed is tedious. However, one must apply the energy themes to the relevant areas of the organization and make an assessment of the "soft" and "hard" structures of the organization.

The model could also be used to assess the culture of the organization. For example, organizations that are bureaucratic and decaying can be represented by a higher score on control (i.e. over-dependence on routines and procedures) with lower scores on themes that bring out the sense of higher purpose (e.g. integration, meaning, community etc).

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Meaning

- **Is it holistic?** Yes

   The model is sufficiently holistic as it covers most aspects of strategy and operational of the organization.

- **Is it profound?** Yes

   This covers in depth most areas (both "soft" as well as "hard" areas of the organization).

Measurement

- **Is it an archetype?** No

   This model does not provide a state or type for the organization. There is no visual map to communicate the result of the model.

- **Is it behavioral anchored or environmentally anchored?**

   Environmentally anchored. This is done by analyzing the environment around the organization and making an assessment of the extent of over/under development of the energy themes.

- **Can it monitor trends?** YES.

   The model is mathematical based and does produce values that can be monitored over time.

- **Is it tested?** YES.

   The model has been tested but not as extensively as the F/W/C-P model in approach A.

Manageable

- **Is it objective?** YES (Partially)

   The areas of imbalance between the seven energy themes are the end result, and the assessment and relevance to the organization can be gauged. However, it does require further analysis to pinpoint areas of weakness/strength in the "soft" and "hard" structures of the organization.

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- **Is it practical?** YES (partially)

  The model requires the formation of post-instrument collaborative groups from within the organization to jointly relate the model to specific areas of strengths and weaknesses in the "soft" and "hard" structures of the organization. However, a first impression of the organization can be obtained from the model.

Gap in the measure:

Some of the identifiable gaps in the measure are:

The detailed questionnaire was not available for review, but an initial analysis of some sample statement indicated that the debilitating effect on learning due to poor structures in the organization has not been sufficiently considered. It is not an archetype.

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Title: A model of organizational learning and the diagnostic process supporting it

Publisher: The learning organization, Volume 1, No: 3, 1994, pp. 26-37.

Author(s): Carol A. Benoit and Kenneth D. Mackenzie

Subject area: The learning organization

Related areas: The management of change.

Processes used for construction: The model only considers organizational level learning (hence the name "OLL" model). The model does not view organizational learning as an outcome of individuals in the organization; rather it views it as an outcome of the organization itself.

The literature goes on to extensively elaborate the need to go into the root cause of the problem. It says that the problems you see on the surface of the organization may have a very different underlying cause. For this reason, the model is based on a general notion of process. The argument is that the process approach recognizes that the outcome is more sure when one manages the process that produces it. Managing the outcome without controlling the process is hit or miss.

There are 12 enabling processes, which enables the organization to change. The model assumes that change is going to be the norm for a learning organization. Hence managing and enabling change increases the ability for the organization to adapt and learn. The 12 enabling processes are:

- Establishing and maintaining clear strategic direction.
- Defining and updating the organizational logic.

- Ensuring best decision-making.

- Adapting to ensure position clarity.

- Ensuring systematic planning that is workable, involved and understood.

- Integrating associate selection, development and flow with the strategic direction.

- Nurturing and rewarding opportunistic and innovative problem solving.

- Ensuring healthy problem solving throughout the organization.

- Setting tough and realistic performance standards

- Operating equitable and effective rewards system

- Ensuring compatibility of interests

- Encouraging and rewarding ethical behavior for all associates

These 12 enabling processes are supported by key implementing processes. There appears to be key implementing processes for each enabling processes and a total of 38 key implementing processes for the model. The model is based on a questionnaire. This model consists of two steps:

Step 1: Groups of participants are brought together in a formal setting (the model is applied by consultants and is the tool used by Mackenzie and Company Inc. in their consulting work on learning organization). The participants are then required to respond to 96-scaled questions and three open-ended questions.

Step 2: The analysis is then carried out and typically involves the calculation of mean, mode, median, maximum, minimum, standard deviation etc. and translating these to a graphical bar chart. The overall score for every enabling process is computed and the score for the key implementing processes supporting the enabling process are computed. The scores for the key implementing processes are compared with the world-class benchmark (set by Mackenzie and Company through their experience) and the realistic standard of excellence. The variance with the realistic standard of excellence is computed.

Current state
of property

Key implementing processes
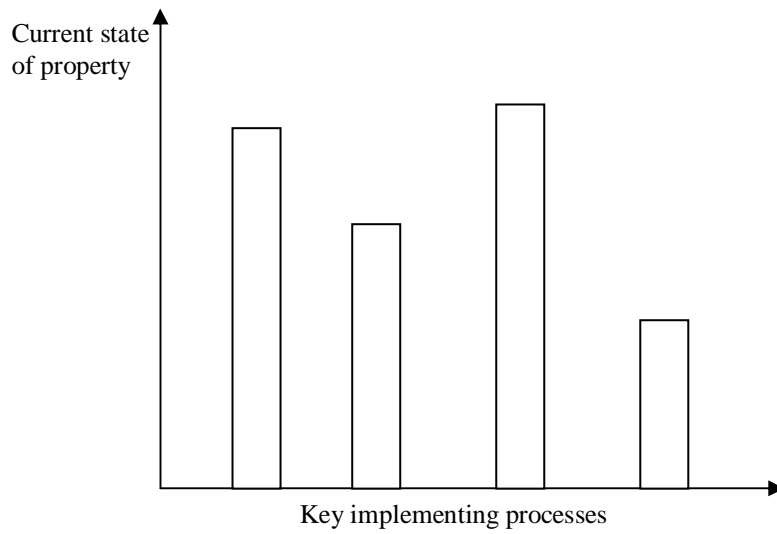
Establishing and maintaining strategic direction = 3.92

Key implementing process	World class bench mark	Realistic standard	Score	Variance
Understanding and use of environment	4.50	4.25	3.73	0.52
Developing and using mission statements	4.50	4.25	4.17	0.08
Integrating new technology with strategic direction	4.50	4.25	4.03	0.22
Ensuring organizing assumptions	4.50	4.25	3.88	0.37

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Outcome of the measure: The model is used to produce four tangible reports. These are:

- The Desired organization characteristics – From the above process, the model can evaluate the six desired organization characteristics (the literature does not elaborate on the six organization characteristics)

- The main enabling processes - The weaknesses and strengths of the enabling processes as well as an assessment of the key implementation processes are done.

- The learning organization - This is an assessment by the consultant on the four key learning processes of the organization (i.e. evolution of the organization's theory-in-use, developing organizational means to implement the theory-in-use, applying organizational means and deployable technologies, and, selecting and developing deployable technologies).

- The organization's short-tem potential – This is a very interesting exercise carried out by the consultants. They determine the short-term potential of the organization when management decides to intervene to improve the key implementing processes. The assumption used here is that further improvements become increasingly difficult as scores improve. Based on this assumption, the authors have set pre-established constraints to the maximum improvement possible in the short term. A linear programming model is then used to determine the organization's short term potential. This enables an organization to set practical expectations in the short tem.

What appears to be the objective of the exercise is a continuous use of this tool in the improvement cycle of the organization (i.e. identification of problems, formulating the problem, decision-making, implementation, and audit and review). There is no mention of the usage of open-ended questionnaire but the consultants could use it to analyze and correlate it to the results of the scaled questionnaire.

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Meaning

- **Is it holistic?** Yes

    The model is sufficiently holistic as it covers most aspects of strategy and operational of the organization.

- **Is it profound?** Yes

    This covers in depth most areas (both "soft" as well as "hard" areas of the organization).

Measurement

- **Is it an archetype?** No

    This model does not provide a state or type for the organization.

- **Is it behavioral anchored or environmentally anchored?**

    Environmentally anchored. This is done by analyzing the enabling processes of the organization. The behavioral aspects of the individual and the groups are not considered.

- **Can it monitor trends?** YES.

    The model is mathematical based and does produce values that can be monitored over time.

- **Is it tested?** YES.

    The model has been tested by Mackenzie and Company Inc. in many of their client sites.

Manageable

- **Is it objective?** YES

    The model provides a good insight into some of the root causes of problems. It appears to sufficiently cover the "soft" and "hard" (partially) structures of the organization.

- **Is it practical?** NO

    The model requires the intervention of consultants to implement the tool and analyze the findings. It could also be done internally by the HRD people but require training. It is an expensive process since it is an organizational level model and requires a fairly significant sample size across the organization.

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Gap in the measure:

Some of the identifiable gaps in the measure are:

- The "soft" structures seem very well covered but the "hard" structures not as adequately.

- The model does not take into account the impact of individual behavior in the organization and their impact on learning and change.

- Although the usage of Linear programming to determine the short term potential of the organization is innovative, it can bring about certain issues:

    i. What is looked as the maximum possible improvement score can become redundant when the external environment changes.

    ii. Can the use of Linear programming (which is largely single objective) be sufficient in a learning model? Multi objective with the use of Goal programming would provide a better practical foundation.

    iii. The contribution or impact by each of the key implementation process on the learning and change energy would obviously be different. This can be addressed by applying "weights" to the variables in the objective function in the LP model. This again is subjective.

<div align="right">**APPENDIX 9**</div>

<u>Title: Predictors of learning organizations: a human resource development practitioner's perspective</u>

Publisher: The learning organization, Volume 7, No: 1, 2000, pp. 5-12.

Author(s): Griego, Orlando V; Geroy, Gary D; Wright, Phillip C.

Subject area: The learning organization, and Human Resources Development

Processes used for construction: The model considers the learning organization as one that facilitates the learning of all its members and continuously transforms itself. This definition of learning organization is behavioral based. The model considers five learning predictors and draws this from the learning organization practice's profile (from O'Brien). They only consider 5 out of the 12 sub systems. These learning predictors are considered as factors or practices that have the potential to continuously transform the organization though learning. The claim by the authors is that the learning predictors are practitioner based and this is drawn from the conclusions of Fagenson and Burke (1990). Fagenson and Burke (1990) showed that that there were seven activity categories of practitioner's activity patterns. These categories are: human resources planning and development, management style development, vision facilitation, job and structural design, high-technology integration, managing diversity, and planning and forecasting.

The five learning predictors are:

- Training and education
- Rewards and recognition
- Information flow
- Vision and strategy
- Individual and team development

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The methodology employed was:

1. Every learning predictor consisted of five questions ranging from 5 = strongly agree to 1 = strongly disagree. This questionnaire was administered to 48 professional from a population of 150 in a HRD masters' degree program. This obviously is not an unbiased sample!

2. The five learning predictors were considered as independent variables whilst the dependent variable was assessed using Marquardt's (1996) learning organization profile. The article does not elaborate further on the dependent variable and no further comment about this is possible.

3. A multiple linear regression was then carried out and the statistical analysis was done using the SPSS package. Internal consistency reliability for this study was determined using Cronbach's alpha. Overall, the five predictor variables reliability measured in the high 0.80's and low 0.90's. The dependent variable had a very high reliability measure of 0.97.

4. The emphasis was to determine the most significant learning predictors to help practitioner to focus his/her attention. The two most significant learning predictors (determined from the values of the regression coefficients) were rewards and recognition, and training and development.

Outcome of the measure: The final outcomes of the model are:

- The regression coefficients for each learning predictors
- The determination of the significant learning predictors. I quote a sentence from the article: "*The findings from this study support the notion that interventions intended to aid in the metamorphosis from a current organization state to that of a learning organization, may wish to focus initially on two aspects. These aspects are the systems and indicators related to rewards and recognition, and training and education.*"

APPENDIX 9

What appears to be the outcome are the obvious preferences of the survey participants. These participants come from a human resources development background and hence view learning organization in a biased manner. This is why the most significant learning predictors came out to be training and development, and rewards and recognition.

Meaning

- **Is it holistic?** Yes (partially)

  The model appears to be sufficiently holistic as it covers most aspects of strategy and operational of the organization. However, some of the learning predictors cover more than one aspect, which deserves separate consideration. For example, a culture of openness appears to be treated under team and individual development.

- **Is it profound?** No

  This does not cover in depth most areas (both "soft" as well as "hard" areas of the organization).

Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization.

- **Is it behavioral anchored or environmentally anchored?** Behaviorally anchored. The objective is to determine the learning predictors that would potentially change the behavior of the organization.

- **Can it monitor trends?** NO.

  The model is mathematical based and does not produce any trends for the learning predictors.

- **Is it tested?** NO.

  The model is not sufficiently tested.

APPENDIX 9

Manageable

- **Is it objective?** NO

  The model does not provide any insight into some of the root causes of problems.

- **Is it practical?** YES

  The model does not require the intervention of consultants to implement the tool and analyze the findings. It throws out the most significant learning predictors for the organization to focus on. In an implementation sense it appears to be easy and practical.

Gap in the measure:

Some of the identifiable gaps in the measure are:

- The sample taken was biased and insufficient.

- The results of the model do not produce any practical or theoretical sense. For example, the regression coefficient of individual and team development were negative giving us a sense that lesser one does this aspect the greater would be the learning intensity of the organization!

- The model would target the focus of the organization towards some of the learning predictors. In practical implementation this would, at times, be done at the expense of other learning predictors. Learning is multi dimensional and needs to be looked at from more than a few perspectives.

APENDIX 9

Title: Using the learning square

Publisher: The learning organization, Volume 8, No: 3, 2001, pp. 114-124.

Author(s): Lindley, Eric and Wheeler, Frederick P.

**Subject area:** The learning organization

Processes used for construction: The model considers four inter-linked domains, stated as organizational factors that foster the development of learning. The four factors used for the construction of the model are:

1. Multi-dimensional goals
2. Shared vision
3. Continual learning
4. Using tacit knowledge

The multi-dimensional goals are the external information related to competitors and other organizations performances as benchmarks, internal information related to the development of core competencies, and past information and experiences to guide the future strategic direction. This dimension relates primarily to the development of the vision and goal of the organization. The shared vision appears to consider the role of stakeholders in the organization in developing and spreading/embracing the common vision. The dimension of continual learning is stated in the literature as continual learning to add to the collective knowledge base of the organization. The use of tacit knowledge is the relevant knowledge used by individuals in executing the job but not proceduralised or articulated.

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The article only considered a case study and explained the relevance of the model. The mathematical development of the model was not articulated and I perceive that this was not done at the point of writing the article. However, what appears to be the objective is to measure each of the dimensions and plot it in a square as shown in the figure below.
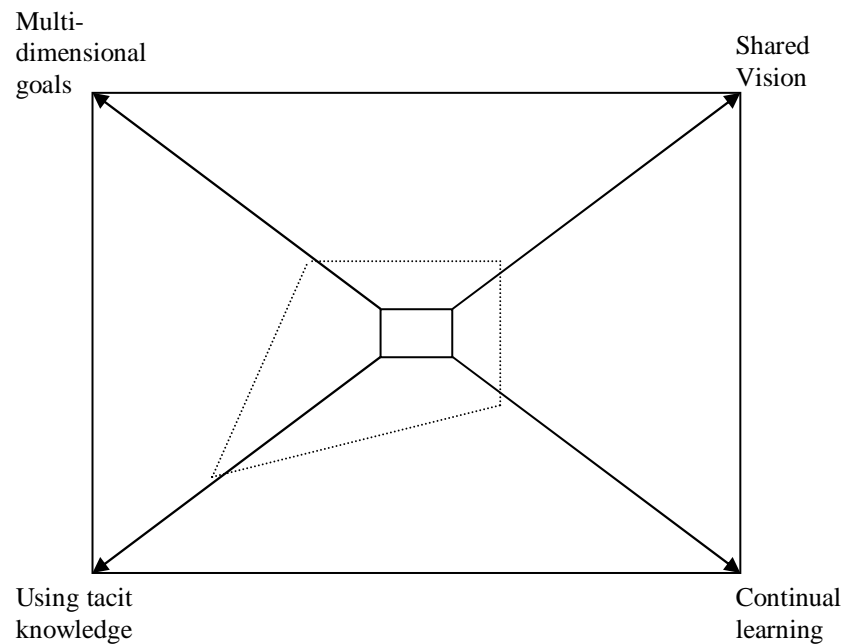
The movement towards each corner of the square would chart the progress of the dimensions. The profile assumes that the improvement in one domain may positively the others.

Outcome of the measure: The final outcome of the model is to measure the dimensions that would promote or enable learning. The model also provides a graphical view of how the dimensions are skewed in the learning square and inform management of decisions that need to be taken. The model is considered a strategic tool that would frame strategic decisions for the organizations. However, one notices that a large degree of sampling is required.

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The model had only been reviewed through a case study of the IS department of the organization and the corporate strategies of the organization. Larger application of the entire organization may not find statistical significance unless the sample size is quite large and covers all levels.

What appears to be covered here is some dimensions of the organization that could help the learning process. Two of the dimensions appear to be environmental whilst the other two (i.e. using tacit knowledge and continual learning) appears to be behavioral. However, when one goes into the type of questions used, it seems to be biased towards environmental measures.

Meaning

- **Is it holistic?** No

  The model is not sufficiently holistic, as it does not cover most aspects of the learning in the organization. The structures are not sufficiently covered, values seems to be neglected and insufficient attention given to team building and collaboration.

- **Is it profound?** No

  This does not cover in depth most areas (both "soft" as well as "hard" areas of the organization).

Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization.

- **Is it behavioral anchored or environmentally anchored?**

  Environmentally anchored. Although the usage of terms seems to cover a mix of environmental and behavioral, the questionnaire suggests an environmentally based model.

- **Can it monitor trends?** YES.

    When the mathematical model is developed (as it appears to be the next step), it could monitor the progress of each dimension.

- **Is it tested?** NO.

    The model is not sufficiently tested.

Manageable

- **Is it objective?** YES (partially)

    The model does not provide any insight into some of the root causes of problems such as structures and the culture of the organization. One has to further analyze the questionnaire to infer some of these causes.

- **Is it practical?** YES (partially)

    If the model has to be applied to the whole organization a large sample is required as the questionnaire is largely individual based for certain dimensions (such as continual learning and use of tacit knowledge).

Gap in the measure:

Some of the identifiable gaps in the measure are:

- The dimensions used in the construction of the model do not cover most critical aspects of the learning organization and there appears to be conflicts in the dimensions used. The conflicts and deficiencies noted are:

    i. The critical aspect of customer and their demands are not recognized in the goal/vision setting.

    ii. The time dimension considers the use of past experience in making goal judgment of the future. Although past experience can enhance the vision of the future it can also blur or drag generative or double-loop learning. This tension does not appear to be addressed in the questionnaire.

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iii. The continual learning appears to consider the climate necessary for learning to take place for individuals, and structures necessary to aid the learning process of individuals. It fails to recognize the importance of shared organizational values and team working.

iv. The use of tacit knowledge (although is important in differentiating an organization from its competitors) cannot be easily measured and is highly subjective. The better method would be to measure the environment and the structures that would promote the use of tacit knowledge.

- The assumption used in this model is that improvement in one domain would positively influence the other. This is broadly true theoretically and the learning square could theoretically support this hypothesis. However, in practice this could be different and could push the practitioner to a singular focus on a dimension.

- The learning square is not holistic, as it does not consider some important aspects of the learning processes. Some of the critical factors not considered are organizational values, reward structures, team working and collaboration (the questionnaire are mostly individual based), the role of leadership in the organization etc.

<div align="right">**APPENDIX 9**</div>

<u>Title: The learning organization diamond</u>

Publisher: The learning organization, Volume 8, No: 1, 2001, pp. 6-20.

Author(s): Moilanen, Raili

Subject area: The learning organization

Processes used for construction: The model is considered to be a holistic view of the learning organization. The elements utilized in this model find congruence with the works of Senge (1990) and Pedlar et al (1991 and 1997), and have been largely derived from these works. The elements considered are:

1. Managing and leading as driving forces
2. Finding purpose
3. Questioning
4. Empowering
5. Evaluating learning and learning organization.

The model is considered at two levels or dimensions (i.e. at the level of the whole organization and at the level of the individual). The emphasis of the model is on both these dimensions.

The model is presented in the form of a diamond (see figure below) with two sides and ten elements. One side deals with five elements and deal with organization as a whole whilst the other side has five comparable elements dealing with the individuals.

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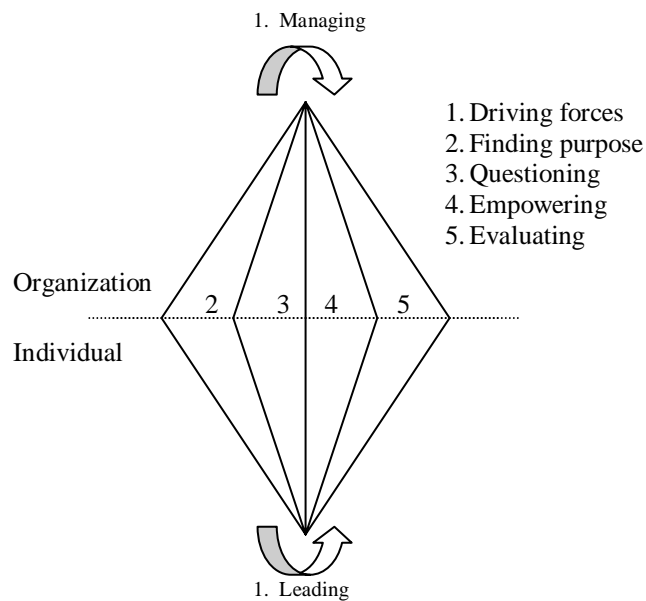
Driving forces (1) – The organization side is considered as managing the whole, where the organization wide system, structures and processes are managed which would enable or hinder learning. On the individual side, it is the leadership of managers who would lead in the learning of individuals and teams.

Finding purpose (2) – On the organization side it is the vision and strategy of the organization, and on the individual side it is the individual's motivation and willingness to learn new things. The key is to link the individual's purpose with the organization's vision and strategy.

Questioning (3) – On the organization side it is the questioning of the organization routines and procedures and on the individual side it deals with questioning of individuals beliefs, mental model and personal patterns and routines.

Empowering (4) – On the organization side it involves having the systems in place for learning enhancement, whilst on the individual's side it is the knowledge of selecting the proper tools and applying them.

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Evaluating (5) – On the organization side it is the assessment of the learning organization, whilst on the individual side it is self-assessment as well as group-based assessment systems.

The model is questionnaire based and would include the following steps in its development:

1. There are 40 questions with 20 dealing with the level of the organization and 20 dealing with the level of the individual. The tool was tested in a group of 691 respondents and 25 organizations. The organizations chosen were categorized into public sector, IT, manufacturing, banking and insurance, training/educational, and wholesale/retail.

2. The reliability of the model was then tested using the Cronbach's coefficient alpha. The coefficient alpha was derived for the entire tool, then the different levels, and finally for the10 elements. The values at the organizational level exceeded 0.7 showing high reliability, whilst the values at the individual level ranged from 0.5 to 0.9.

Outcome of the measure: The outcome of the measure was not clearly stated in the article.

Meaning

-   **Is it holistic?** YES
    The model is sufficiently holistic and covers most aspects of the organizations operational, strategic, systems and structures.
-   **Is it profound?** YES
    The tool covers learning at the individual and organizational level fairly in depth. However, the group or collective learning is not sufficiently addressed.

<div align="right">**APPENDIX 9**</div>

Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization, although there is a possibility of relating it to an archetype by extending the study.

- **Is it behavioral anchored or environmentally anchored?** Behaviorally anchored. The questionnaire and the theoretical analysis clearly show that the emphasis is on individual/organizational behavior.

- **Can it monitor trends?** YES.

  Although this is not the intention of the model, one can chart the progress of elements at different levels.

- **Is it tested?** YES.

  The model has been sufficiently tested across six categories of industries.

Manageable

- **Is it objective?** NO

  The model does not provide any insight into some of the root causes of problems such as structures and the culture of the organization. One has to further analyze the questionnaire to infer some of these causes.

- **Is it practical?** NO

  The model is easy to implement, but since it is behaviorally anchored the sample size must be sufficiently large for it to be statistically valid. Further, the interpretation is not sufficiently objective.

Gap in the measure:

Some of the identifiable gaps in the measure are:

  a. The model seem to cover most aspects of learning organization but the address on systems, structures and processes are not sufficiently covered.

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b. The tool covers quite significantly the manager's role in organizational learning. However, the impact the manager has depends on his influence in the organization and this is not considered in the model.

c. The interpretation of the model from analysis to identifiable root causes is not very clear and requires expertise intervention. It is therefore not sufficiently objective.

APPENDIX 9

Title: The learning organization: the measurement of company performance

Publisher: Journal of European industrial training, Volume 20, No: 1, 1996, pp. 31-44.

Author(s): Leitch, Claire; Harrison, Richard; Burgoyne, John and Blantern, Chris.

Subject area: The learning organization

Related areas: Performance management

Processes used for construction: The author considers the 11 learning company characteristics from Pedlar et al (1988) model. The model clusters these 11 learning company characteristics into five clusters as shown below

> **STRATEGY**
> 1. Learning approach to strategy
> 2. Participative policy making
>   **LOOKING IN**
> 3. Informating
> 4. Formative accounting and control
> 5. Internal exchanges
> 6. Reward flexibility
>   **STRUCTURES**
> 7. Enabling structures
>   **LOOKING OUT**
> 8. Boundary workers as environmental scanner
> 9. Inter-company learning

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LEARNING OPPORTUNITIES

10. Learning climate

11. Self-development for all

These 11 characteristics provide a holistic view of the learning organization as it covers strategy, operational, systems, processes, structures etc. The 11 learning characteristics do not describe the complex learning processes but seeks to create the environment and processes for learning to flourish in the organization.

The learning approach to strategy means the entire systems and structure to formulate and implement strategies are considered as a learning process in the organization. The participative policy-making refers to the involvement of all stakeholders in the policy and strategy formulating process. Informating implies the use of information technology to distribute and inform people with a view to empower them. Formative accounting and control shows the importance given to accounting and budgeting system in the model. It is also a tool used to review and inform company performance and hence a rich source of internal information. The internal exchange is the relationship between units in the organization. It means all units and departments consider one another as customers and suppliers (the TQM concept). Reward flexibility refers to the alternative ways individuals in the organization are rewarded. The enabling structures refer to the rules and structures that should be flexible enough to respond to change in external environment. Boundary workers as environmental scanners refer to members within the company collecting external data from the market place. The inter-company learning involves collaborating with external organizations in learning and gathering external information. The learning climate is primarily management responsibility. They have to ensure that members are provided with the right environment to continuously improve and learn. Self-development opportunities for all refer to the resources and facilities given to employees to develop themselves.

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The model is questionnaire based. The questionnaire has 55 elements for the 11 characteristics of learning and each element has two parts to a question. The two parts asks, "How it is" (i.e. the current state) and "how I would like it to be" (i.e. the ideal state). The dissatisfaction index is then calculated which is basically the ratio of the two parts for each element. The ratio approach is less likely to cause a tied rank as the relative weights of different scores are analyzed. The dissatisfaction index can range from 0% (fully satisfied) to 100% (totally dissatisfied).

Outcome of the measure: The model is able to compute the dissatisfaction index for each learning characteristics for the entire organization or analyze it for various categories of individuals surveyed (e.g. the various categories of management grade). From this, it is possible to determine what areas to be looked into and provide management a guide to assess and develop the learning organization.

Meaning
- **Is it holistic?** YES

  The model is sufficiently holistic and covers most aspects of the organizations operational, strategic, systems and structures.
- **Is it profound?** YES

  The tool covers learning at the individual and organizational level fairly in depth.

Measurement
- **Is it an archetype?** No

  This model does not provide a state or type for the organization, although there is a possibility of relating it to an archetype by extending the study.
- **Is it behavioral anchored or environmentally anchored?**

  Environmentally anchored. The questionnaire and the theoretical analysis clearly show that the emphasis is on processes to develop a learning organization.

- **Can it monitor trends?** YES.

  Although this is not the intention of the model, one can chart the progress of 11 characteristics by comparing the dissatisfaction index.

- **Is it tested?** YES.

  The model has been sufficiently tested across various industries.

Manageable

- **Is it objective?** NO

  The model does not provide insight into some of the root causes of problems and has to be deduced by an expert intervention.

- **Is it practical?** YES

  The model is fairly easy to implement although the interpretation is not sufficiently objective.

Gap in the measure:

Some of the identifiable gaps in the measure are:

a. The learning organization is not an archetype.

b. The learning climate is quite wide. However, the only factor that seems to be considered here is the manager's role in creating the right learning environment.

c. The model needs further intervention to apply into practice, as the root causes need further analysis.

APPENDIX 9

Title: Measuring organizational learning

Publisher: Working paper series, Western business school, London, Canada.

Author(s): Crossan, Mary; Hulland, John.

**Subject area:** The organizational learning

Related areas: Learning organization

Processes used for construction: The model incorporates Senge's (1990) five discipline and Huber's (1991) four constructs in deriving a model to measure organizational learning. The model considers 3 levels (i.e. individuals, groups and organization) and looks at how learning flows between the levels and the tension created between the levels of learning. The focus in this model is the learning behavior of the three levels and there is a mix of learning culture or environment in the questionnaire.

The model considers the 3 levels of learning in the organization and uses Senge (1990) and Huber (1991) to support this view. For e.g. in Senge's five discipline, personal mastery and mental models focus on the individual, team working and shared vision focuses on the group, whilst systems thinking can be thought of as an organizational level construct as one understands how systems, processes, structures etc. affect one another. The information acquisition in Huber's (1991) model is mainly at the individual level, whilst information distribution and interpretation occurs at the group level. The organization memory deals at the organizational level as learning are captured into the rules and structures of the organization. The primary drawback in Senge's and Huber's frameworks is that they do not help to identify tensions associated with organizational learning.

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The model developed to identify the tensions between the levels is diagrammatically represented below:
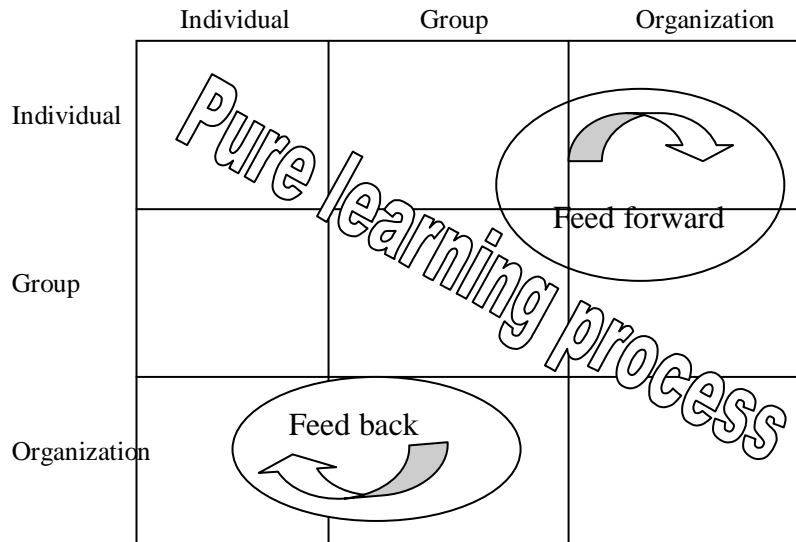
Questionnaires were issued to 64 firms and 104 completed questionnaires were returned. The average sample per organization is less than 2 and this would not represent a good statistical sample to evaluate tensions between levels in individual organization.

The questionnaire had a total of 68 questions, which are related to nine cells in the matrix presented above. The responses to the 68 questions were factor analyzed to determine their general coherence. Certain questions were then eliminated which loaded separately on their own factors. Factor analysis was then conducted for the three different levels and certain questions were eliminated. Those eliminated were items loading uniquely on a separate factor, questions with low factor loading and questions with high cross loading. The Cronbach's alpha for each cell were greater than 0.7 showing acceptable convergent validity. This process was done in order to determine the best set of questions to be issued to organizations to identify the tensions between levels. The actual identification of tensions was not done, as the objective was to develop the model. The work appears to be preliminary at this stage.

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Outcome of the measure: The outcome of the model appears to be an attempt to study how well learning goes across various levels. Averaging the values of the cells on the diagonal would indicate how well the organization manages the discreet processes of learning. The average values of cells above the diagonal would indicate the strength of the feed forward loop. It provides an indication of how well the organization builds on individual learning to integrate to the group and the organizational routines and structures. The average value below the diagonal provides us with a measure that determines the effect of the feed back loop. This shows how well the organization uses the learning embedded in organizations to facilitate collective and individual learning.

Meaning

- **Is it holistic?** YES

  The model is sufficiently holistic, as it appears to cover most aspects of soft and structural architecture of the organization.

- **Is it profound?** YES

  The tool covers learning at the individual and organizational level fairly in depth.

Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization, although there is a possibility of relating it to an archetype by extending the study.

- **Is it behavioral anchored or environmentally anchored?** Behavioral anchored. The questionnaire and the theoretical analysis show that greater emphasis is on behavioral aspects of learning.

- **Can it monitor trends?** YES.

  Although this is not the intention of the model, one can chart the progress of the feedback, feed forward, pure learning process and the learning tensions.

- **Is it tested?** NO.

  The model has not been sufficiently tested across various industries.

Manageable

- **Is it objective?** NO

  The model does not provide insight into some of the root causes of problems and has to be deduced by an expert intervention.

- **Is it practical?** NO

  The model needs a large sample size to create a statistical valid model and expert intervention to deduce the findings of the model.

Gap in the measure:

Some of the identifiable gaps in the measure are:

    a. The constructs used cover most areas of learning but have neglected some critical aspects such as the external environment, values, and reward structures are insufficiently addressed in the questionnaire.

    b. The model seeks to address learning between levels and a measurement for such a complex behavior seems impossible. What appear to be done are a measure of the environment and the individuals perception of the behavior between the levels and this can be subject to unwanted variation in perception, which can affect the validity of the model.

The model needs further intervention to apply to practice, as the root causes need further analysis.

APPENDIX 9

Title: Measuring organizational learning climate: A cross-national replication and instrument validation study among public sector employees (Part A)

Publisher: Review of public personal administration, Columbia

Author(s): Mikkelsen, Aslaug; Gronhaug, Kjell.

Subject area: The organizational learning and learning climate

Processes used for construction: The first review would be a description of how the learning climate questionnaire (LCQ) was first developed by Bartram, Foster and Lindley in 1993 in their study of public sector employees in Great Britain.

The learning climate is how individuals in organizations perceive and interpret the external stimuli. The collective perception of individuals in the organization forms the learning climate. How organizational members form similar perception is a different study altogether and can be reduced to the values and beliefs they commonly share. Based on the above, Bartram et al developed an instrument that took place in three phases:

Phase 1: Structured interviews were conducted with members of the employment services in Great Britain and 800 statements were generated. These statements were generated after asking the employees what had hindered or helped their learning and personal development at work. The 800 statements were content analyzed and 11 aspects related to learning were then weaned out. The statements were then sorted and were reduced to 233 mutually exclusive items.

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The trial questionnaire was sampled with 925 employees working for the employment service. A detailed item analysis was done to see if the items were clearly worded and sufficiently discriminate. A subset of 136 statements was then selected out of the 233 statements. A principal component factor analysis was done on the 136 statements and a stable seven-factor solution was obtained. These seven factor scales were named as follows:

- Management Relations and style (High scores reflect perception of management being supportive).
- Time (High scores reflect that individuals perceive sufficient time to do their jobs and learn).
- Autonomy and responsibility (High scores reflect perceptions of control over organization events, initiating actions and making decisions).
- Team style (High scores reflect perception of opportunities to learn from expert colleagues).
- Opportunity to develop (High scores reflect perceptions of opportunities to learn new jobs and do a variety of types of work at the workplace).
- Guideline on how to do the job (High scores reflect perception of easy access to relevant written information and guidelines).
- Contentedness (High scores reflect perception of a general feeling of satisfaction with the workplace).

These dimensions were captured with varying number of items (from 5 to 28 items) and Cronbach's alpha ranged from 0.75 (five items) to 0.96 (28 items).

Phase 2: In the next phase a final version of the LCQ featuring seven scales with 10 items per scale were developed.

Phase 3: 320 respondents from 12 different public sector workplaces tested the robustness of the final LCQ.

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Outcome of the measure: The purpose of the study was to elicit the dimensions of the learning climate and seven dimensions (in-line with the seven scales described above) were elicited. The outcome is clearly individual's perception of what they feel about their workplace and the questionnaire is designed in such a manner:

If a sufficient sample size is taken from a homogeneous population (e.g. in an organization), then the instrument will reflect how individuals perceive the (learning) climate as long as there are no significant deviations in the responses.

Meaning

- **Is it holistic?** NO

  The learning climate seems to consider primarily what the individual feels in the organization and the learning seems to be too internally focused (e.g. learning from expert colleagues, learn new jobs etc). The importance of being exposed to external environment is missing. This may be because the survey was carried out in a public sector environment where market competition is not an issue.

- **Is it profound?** YES

  The seven dimensions are covered fairly in depth.

Measurement

- **Is it an archetype?** No

  This model does not provide a state or type for the organization.

- **Is it behavioral anchored or environmentally anchored?**

  Environmentally anchored. The instrument measures the collective perception about climate or the environment.

- **Can it monitor trends?** YES.

  Although this is not the intention of the tool, one can chart the progress of the dimensions over time.

- **Is it tested?** YES.

  The model has been sufficiently tested in Great Britain and Norway but mostly restricted to public sector environment.

Manageable

- **Is it objective?** NO

  The model does not provide insight into some of the root causes of problems and has to be deduced by an expert intervention.

- **Is it practical?** NO

  The model needs a large sample size to create a statistical valid model and expert intervention to deduce the findings of the model.

Gap in the measure:

Some of the identifiable gaps in the instrument are:

- The learning climate seems to consider primarily what the individual feels in the organization and the learning seems to be too internally focused (e.g. learning from expert colleagues, learn new jobs etc).

- The model seems to be built for public sector employees and some of the dimensions seem to be public sector oriented. For e.g. consider the dimension "guidelines on how to do the job" where high scores indicate perception of easy access to relevant written information and guidelines. This dimension is relevant for public sector where rules and regulations guide the huge bureaucracy, but would go against the requirement of agility and flexibility.

- The tool does not consider the structure of the organization but its influence of the learning climate is very apparent. For example, one dimension considered is the time to learn and do their job. This is related directly to the effectiveness of the information structure of the organization.

APPENDIX 9

Title: Measuring organizational learning climate: A cross-national replication and instrument validation study among public sector employees (Part B)

Publisher: Review of public personal administration, Columbia

Author(s): Mikkelsen, Aslaug; Gronhaug, Kjell.

Subject area: The organizational learning and learning climate

The same instrument discussed in Part A above was used in public sector employees in Norway. This is a cross-cultural replication study done to prove the global relevance of the LCQ. The Norwegian society is more egalitarian than the British society with a stronger worker protection environment.

The LCQ was first translated into Norwegian by a panel of language experts and then translated back into English by another set of experts. The original LCQ was then compared with the re-translated English version and sufficient convergence was found. The Norwegian LCQ was then issued to public sector employees in Norway. The instrument was found to be generally acceptable in the Norwegian setting.

To assess the predictive validity of the LCQ, the authors included measurements of three constructs believed to be theoretically linked to the learning climate. These constructs are:

- Job stress. This was measured by Cooper's job stress questionnaire. This instrument consists of 22 items rated on a six-point scale ranging from 1 (no stress) to 6 (high experience of stress).
- Job satisfaction. This was measured by four items from Quinn and Shepard (1974) model.

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- Organizational commitment. This was measured using the organizational commitment questionnaire developed by Mowdey et al (1979).

The Pearson's correlation coefficients were calculated with the chosen criterion variable to assess the predictive value of the learning climate questionnaire. It was found to be significantly correlated.

APPENDIX 10 – Letter to the Human Resources Manager

Mr. /Ms. XXXXXXX
Human Resources Manager
Address
Address
Address

Date

Dear Sir/Madam,

As per the telephone conversation that we had with you, I thank you for your willingness to help us validate the questionnaire instrument.

I have included in a self addressed stamped envelope the 3 page questionnaire, and a covering letter to the participant. Can you please hand over the envelope to the participants, and ensure that the participants come from a cross section of the hierarchy.

The analysis would be confidential and would not be divulged separately for the organization. The intent is to only statistically validate the instrument.

Once again, I thank you for your offer to help me with the validation

Kind regards,

Peter Sun
Lecturer

APPENDIX 11 – Letter to the Survey Participants

To: The participant

Date

Dear Sir/Madam,

This survey is part of my on-going research on "A methodology to assess and develop a learning organization". The results of this survey will contribute towards the fulfillment of the Doctor of Philosophy (PhD) study I'm currently undertaking.

The survey would not take more than 20 minutes to complete. However, it is important that **all questions are accurately answered**. All information provided is strictly confidential. If you feel uncomfortable in answering the questions, you can opt not to do so. If you have any questions, you can contact me by e-mail, phone or fax (details given above).

When the questionnaire is completed, you can seal it and send it using the stamped envelope provided. Once again, I thank you very much for your cooperation.

Kind regards,

Peter Y.T Sun
Lecturer