TOWARD A REGIONAL ONTOLOGY FOR INFORMATION SYSTEMS PROJECT MANAGEMENT

by

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A thesis submitted in fulfilment of the requirements for the

Degree of Doctor of Philosophy in Information Systems

DEPARTMENT OF INFORMATION SYSTEMS

FACULTY OF COMMERCE

UNIVERSITY OF CAPE TOWN

DECEMBER 2008

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Declaration

I hereby declare that

Toward a regional ontology for Information Systems project management

is my own work, and all sources have been acknowledged through referencing.

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Acknowledgements

ABSTRACT

The extant research literature on Information Systems (IS) project management illustrates that there is considerable confusion about the true nature of IS project management. The bewilderment is expressed in a number of ways. Practitioners are reporting that there is considerable mismatch between the prescribed practices they are socialised into and their actual experiences of project work. Appropriately, there are also debates about what constitutes project success and about what factors influence project success and failure. Whilst these fundamentals are being debated there are also concerns expressed about the lack of adequate underlying theoretical constructs to give coherence to the kinds of questions raised. As the essence of IS project management is being debated there is evidence suggesting that the project-driven organisational form is growing in popularity. Together with the concerns there are proposals being offered as alternatives to improve understanding of project management. The review undertaken in this thesis illustrates that alternatives are emerging despite the existence of an entrenched value system that makes society prone to unwittingly accept and be attracted to the adoption of best practices such as PMBOK, which is central to the debate taking place in IS project management.

As a result of these perplexing issues the author has chosen to investigate the development of underlying theory to serve as a regional ontology to give these debates coherence and allow for better integration of the efforts being undertaken to improve IS project management. In the pursuit of this goal of developing a regional ontology, the notions, concepts and theories related to existentialism and social construction were investigated. These were investigated because the research literature places considerable emphasis on the need to understand as-lived project experiences and to design a discourse that takes cognisance that existence cannot be eluded. One of the significant outcomes that resulted from this research is the development of a proposed regional ontology. This was achieved by fusing the theories of Heidegger's *Dasein*, Bourdieu's "Theory of practice" and Maturana and Varela's "Theory of living systems". The regional ontology is a consolidation of the various concepts defined by these researchers. These theories complement each other to a give rise to a relational model of social construction which also has related phenomenological, existential and biological perspectives.

The researcher went about this task in an *a priori* manner because of the nature of the study and the belief that there will be limitations in empirical efforts because of the absence of an adequate ontology. The proposed ontology was interpreted using the popular alternatives that have recently emerged alongside the established best practices. The perspectives of complex, responsive processes of relating, the temporary organisation, PMBOK and agility were reviewed using the regional ontology. The interpretation process illustrated that the regional ontology is able to provide a more fundamental and coherent context to subsume and delimit the emerging new frames that were reviewed. In addition, the thesis discusses the researcher's view of contemporary project management practice that accords with the regional ontology principles.

Through arguments and the contemporary context of IS project management practice that was sketched, the principles of the regional ontology were interpreted. Through this process it was established that best practice modes of education should not exist in isolation but should instead be situated within a wider analogical context that embraces the values of learning, becoming and innovating.

The core principles of the regional ontology imply that IS projects are sites of continuously evolving human action. Project organising or change is the result of reweaving actor beliefs and habits through the institution of particular cognitive representations, which may be referred to as a temporary organisation, to encourage new experiences. The experience of being together as a project organisation is therefore nothing more than a temporal process of human relating, in which the project team members together continually review their futures by actions in the present. Team coherency, synergy and co-operation are directly influenced by the pace and extent to which the projects mandate is absorbed into the background as a phenomenal domain and provides affordances for project participants.

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December 2008

TABLE OF CONTENTS

LIST OF FIGURES & TABLES

Chapter 1 Introduction and Outline of the Thesis

1.1 Introduction

One out of three IT projects fail because such projects either miss the targets or fail to deliver the required business functionality (Nelson, 2007; Reich, 2007). Within the definition of IT there are Infrastructure projects and Information Systems projects. The differentiation between IT and IS projects is not a mutually exclusive one but IS projects are defined to be more concerned with providing an information platform to enable and execute organisational activities while IT projects are more concerned with technological and infrastructure related aspects. This thesis is concerned with IS projects. While many researchers fail to draw a distinction and make reference to IT projects, their works are still referenced if the findings are found to be relevant for IS projects as well.

One common way of examining areas to focus on in IS projects is to segment the project into the following areas : People, Product, Process and Technology issues ((Steve McConnell, 1996) cited in Nelson, 2007, p. 70). People issues relate to issues of motivation, team structure and relationships. The product issues relate to the product features and the desired level of sophistication. Process refers to both the management process and the technical methodologies while technology refers to the technical architecture of the solution. The Project Management Institute (PMI) and the Software Engineering Institute (SEI) have done a great deal of work researching and publicizing project management processes (Nelson, 2007, p. 71).

The high failure rates IS projects tend to suffer from has been researched by a number of researchers. Nelson (2007) is one researcher who has tried to explain failures by conducting project retrospectives on 99 projects undertaken in North America. He found that

the vast majority of mistakes made were either process mistakes (45%) or people mistakes (43%), while technology (8%) and product mistakes (4%) were only attributable to the remaining 12%. This finding illustrates that project success seems to depend largely on managing processes and people. Nelson's study also revealed that in more than half the projects, success could have improved if there had been more focus on better estimation, scheduling, stakeholder management, and risk management (Nelson, 2007, p. 73). One of the suggestions Nelson makes is that project success can be improved if practitioners apply known best practices more rigorously and consistently. He also recommends that project management offices be set-up to train project teams on the application of these best practices (Nelson, 2007).

While best practices have a role to play in improving project success, IS projects have additional complexities that make their management more problematic (Crawford, Morris, Thomas, & Winter, 2006). Crawford *et al.* (2006) state that with IS project management there is a need for the application of project management knowledge areas to a range of project types with differing characteristics. Software projects are often undertaken to solve unique business problems based on requirements that may, and are likely to change during the life of the project. This is further exacerbated by the fluid nature of the IS industry, in which project boundaries are often "ill-defined and shifting" (Crawford *et al.*, 2006). The body of knowledge can therefore only assist a project manager to a certain extent: experience, management skills and leadership ability are necessary to progress beyond these boundaries. The final deliverables of IS projects are ultimately products that are intangible and are normally required to satisfy multiple objectives to solve predefined requirements. The combination of these issues make managing IS projects complex (Spector & Gifford, 1986).

Agile methodologies grew out of the recognition that IS projects are complex. Prior to the 'official' emergence of the term "agile" in 2001, practices had developed that reduced the focus on the traditional, plan-driven software development process and instead preferred an emphasis on communication and soft skills as determinants for project success (Lindstrom & Jeffries, 2004). At a conference in Utah in February 2001, proponents of the various lightweight practices convened "to see whether there was anything in common," (Cockburn, 2002a, p. 215). The outcome was the "Agile Manifesto", a high level statement of what agile supporters valued more than others and a related list of twelve agile principles. Much research on examining the feasibility of agile practices has been conducted (Müller & Tichy, 2001; Layman, Cornwell, & Williams, 2006; Parnas, 2006; Nerur & Balijepally, 2007; Päivärinta, Sein, & Peltola, 2007; Ramesh, Cao, & Baskerville, 2007). What is noticed from these studies is that a number of agile practices are emerging and being punted as "the-way" while they all contribute to the agile principles in varying degrees. This work, whilst useful, has not managed to provide clear direction to see these practices within a common context and the ideological debates therefore remain (Baskerville, Pries-Heje, & Ramesh, 2008; Kautz, Madsen, & Nørbjerg, 2008a, 2008b). Research on agile practices does contribute to the process debate but a wider focus on project management is lacking in the IS literature. This is discussed in greater detail in the next chapter.

The first signs of formal project management practice emerged around the 1950s when program evaluation and review technique (PERT) and critical path method (CPM) were used in engineering, defence and aerospace projects. As these practices grew in popularity toward the latter 1960s, professional bodies were established to facilitate knowledge sharing between practitioners. In 1969 the Project Management Institute (PMI®) was founded and in 1996 the PMI issued the first version of the project management body of knowledge (PMBOK®) with an accompanying certification program. During the 1990s businesses were

assimilating Information Technology (IT) at a rapid pace to support a more customer centric and process-oriented organisational structure. A number of contemporary approaches emerged to enable the transition from functionally designed organisations to process-oriented organisational designs. Amongst these approaches were Business Process Reengineering, Enterprise Resource Planning and Client Server computing (Hammer & Champy, 1993; Ackermann, Walls, Meer, & Borman, 1999). These change programs were executed using project approaches which led to an increase in the demand for trained project managers. In response to this growth in demand, organisations like the PMI trained many certified practitioners. During the same period the PMI saw the most noticeable growth in membership which stood at 200,000 members worldwide in 2006 (Linehan & Kavanagh, 2006, p. 62). Unfortunately, this certified project management approach did not lead to significant improvement in project success rates (Crawford *et al.*, 2006).

Although certified project management practices have not improved project success rates significantly, the PMI's arguments for standardisation and certification are justifiable when one considers the affordances standardisation provides. The demand for skilled resources needs training programs to safeguard public welfare through the assurance of minimal project management competence levels. Practitioners have also benefited by being provided with a legitimate profession with defined career progression and certification. The certified practitioners were, however, caught by a paradigm shift in the problem space during the mid 1990s. IS projects demanded higher levels of creativity and innovation. IS was enabling new ways of organising business processes. The objectives targeted in these projects were more qualitative and demanded higher innovation levels (Pollack, 2006).

Prior to the 1990s, project management was mainly applied to civil engineering and manufacturing. Since the 1990s, however, project management techniques and

methodologies were being applied to effect organisational change. There is further evidence within the literature to support the contention that earlier project management forms were almost exclusively reliant on process, tools and techniques, with little concern or attention given to the socio-behavioural influences. However, socio-behavioural influences now form an integral and increasingly important part of the management of projects initiated to effect organisation change (Leybourne, 2007).

Project management failure is most prominent in Information Systems projects where the problems are characterised by high degrees of organisational change and intangible end products. A possible reason cited by Crawford et *al*. (2006) is that these projects depend on participation, reactions and interactions of people for success. Another reason cited for the high number of recent failures is that projects are increasingly being established to go beyond the construction phases. Project management practitioner development has, however, not changed as substantially as the range of problems project management is applied to. The initial version of project management has undergone refinement rather than rethinking. Project management practitioner development is primarily focused on roles of the project team and the explicit knowledge that is required (Crawford et al., 2006).

Project management research in the early 21st century focuses primarily on improving the unacceptably high failure rates projects tend to suffer from (Hoving, 2003). Some researchers have come to the realisation that further refinement to PMBOK will not result in the desired improvement (Bredillet, 2004; Williams, 2004; Winter & Thomas, 2004; Bredillet, 2005). This realisation implicitly sanctioned the acceptance of other forms of non-positivist research initiatives. These have brought the community closer to appreciating the state of project management practice, although not necessarily closer to the actual lived experience on projects. Since the latter part of 2006 a number of initiatives have emerged in the

"Project Management Journal", "The International Journal of Project Management" and "The International Journal of Managing Projects in Business" which debate the adequacy of the underlying theory of project management. A recurring theme is that there are some fundamental flaws in the underlying assumptions of the project management body of knowledge (Williams, 2004; Winter & Thomas, 2004; Nelson, 2005; Bredillet, 2006; Hodgson & Cicmil, 2006a; Bredillet, 2007; Smyth & Morris, 2007). The main concerns relate to the claim that a discourse focussed primarily on "best practice" prevents development of high levels of competence because such focus marginalises the project experience significantly (Cicmil, 2006; Cicmil & Hodgson, 2006; Sewchurran, 2008; Walker, Anbari, Bredillet, Söderlund, Cicmil, & Thomas, 2008a; Walker, Cicmil, Thomas, Anbari, & Bredillet, 2008b)

1.2 Research Problem

Every science presupposes some conception of the essence of the entities that are the objects of its enquiry in research efforts. This conception is often referred to as ontology. Generally there is no need for researchers to question these ontological frameworks. During periods of crisis however, such as the situation being experienced within the discipline of IS project management, researchers have to call into question the ontological frameworks within which they work (Guignon, 1983). The questions levelled at the adequacy of the underlying theory of project management are questions concerning ontology. The research efforts thus far point to a lack of understanding of the "as-lived" project experiences. Martin Heidegger was similarly concerned by a lack of understanding of "as-lived" experiences in daily existence. This motivated Heidegger to give a general account of existence which is presented in his seminal work "*Being and Time"* (Heidegger, 1962; Steiner, 1978; Guignon, 1983; Brandom, 1992; Haugeland, 1992; Guignon & Pereboom, 1995; Critchley, 2002; Sadler, 2005). Although several research efforts are directed at ontology, the limitation thus

far has been the lack of research that draws ontological direction from Heidegger's fundamental ontology.

The motivation for Heidegger's work can be traced to the dualism of objectivism versus subjectivism. This dualism can be traced to Descartes and is therefore often referred to as the Cartesian dualism. Heidegger did not agree with the explanations traditional science offered to explain phenomenon encountered by human beings. The primary problem Heidegger had with the subject-object dualism was that it was not tied to the as-lived daily experience of human beings. Heidegger claims human beings encounter objects (equipment) for practical purposes as having certain significance. This significance is tied to the accomplishment of specific tasks and may be insignificant for other tasks. Objectivism claims that objects or events are encountered through the properties they are defined by. Subjectivism on the other hand claims that encountering objects or events are a mental thing because people appropriate meaning that is specific to them (Guignon, 1983; Brandom, 1992; Haugeland, 1992; Schatzki, 1992; Taylor, 1993; Guignon & Pereboom, 1995).

To improve matters Heidegger added social practice to the Cartesian dualism by establishing his fundamental ontology. Heidegger believed that objectivism and subjectivism are theoretical attitudes which are regional or disciplinary ways of appreciating things that are detached from human experience (Brandom, 1992, p. 46). The ultimate aim for Heidegger's "*Being and Time"* was therefore to provide ontology to serve as a basis for the development of other regional ontologies, such as objectivism and subjectivism. Similarly, the calls to understand the as-lived experience of project management can be seen as a requirement for a regional ontology that draws influence from the fundamental ontology because it is a regional way of looking at social practice in a specific context (Guignon, 1983, p. 64). Heidegger's fundamental ontology presents the concept of *Dasein* (Da-there; Sein-

being) which explains the existence (being) of human beings (Haugeland, 1997). Heidegger's intention was to present a genealogy of the different possible ways of *being*, of human beings.

A primary opportunity pursued in this thesis is to make a contribution toward the development of a regional ontology for the discipline of IS project management that draws from Heidegger's fundamental ontology. As input to the process of developing a regional ontology, recent research concerning the underlying theory of project management and the practice of IS project management will need to be reviewed, interpreted and synthesised.

1.3 Objective of the Research

The objective of this research is to make a conceptual contribution toward the establishment of a regional ontology which can be used to understand and develop the practice of Information Systems project management.

1.4 Research Approach and Methodology

The research approach is non-positivist and critical interpretative. There will be no explicit empirical work. Motivation for adopting this stance is provided in chapter 4. Research literature published since the beginning of the new millennium will be reviewed to understand and synthesise the concerns raised about the adequacy of the underlying theory of IS project management. The researcher has worked as a project manager for a period of approximately ten years. In executing the research project the researcher's predisposition will be that of both researcher and practitioner. Hence the researcher will be more sensitive to some aspects than others. In Bourdieu's terms the researcher can be classified as

researcher with considerable insider knowledge (Bourdieu, 1977). The researcher's experience has been primarily on software implementation projects directed at organisational change. Consequently the researcher will be problematising those projects characterised by mostly qualitative objectives which depend on high levels of innovation. This bias will not negatively affect the findings because IS project management practice is the focus of this thesis.

The contribution toward the development of a regional ontology will be achieved by mapping the model of project practice to a regional ontology and discussing IS project practice in the context of human understanding and existence as defined in Heidegger's fundamental ontology. A fundamental issue that needs to be reflected upon throughout the conceptual mapping is how the ideologies of practice compare with the primary experiences characterising human beings. The research approach and methodology can then be summarised as consisting of four phases:

a) Review the situation of concern with regards to IS project management;
b) Consolidate and synthesise findings;
c) Map the emergent frames of IS project practice to the proposed regional ontology;
d) Make recommendations for the practice, research and education of IS project managers.

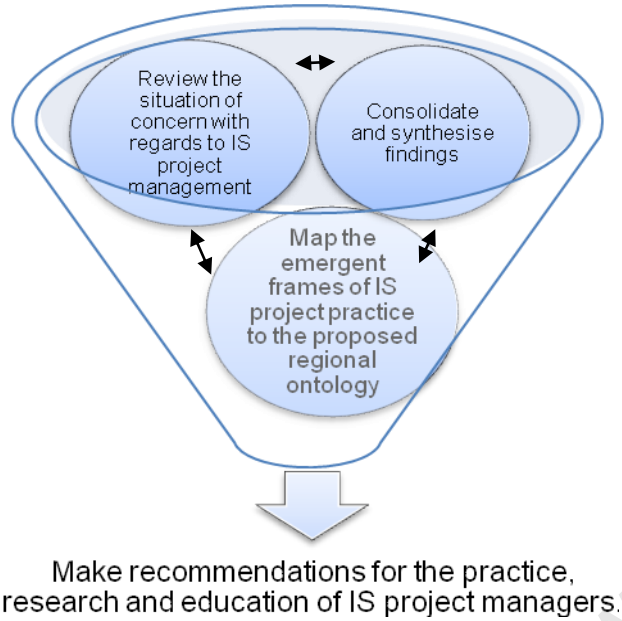

Figure 1: The hermeneutic cycle through which the regional ontology will be developed

The research approach is underpinned by the theory of hermeneutics. Although the resulting structure of the thesis is presented by an almost linear process there is bound to be a dialectic relation between the understanding of the final recommendations and the interpretation of the individual stages as reflected in Figure 1. The hermeneutic cycle will be influenced by the researcher's practitioner background (Myers, 2004).

1.5 Expected Contribution to the Field of Information Systems Project Management

The primary contribution this thesis targets is to bring inter-textual coherence to Information Systems project management research. The intent is to initiate coherence in the project management literature which at present seems to be diverging into disparate and incoherent views. The initial step in this research project involves summarising and synthesising

current IS project management practice. This process will result in rich insights that explain the generative schemes which are conditioning IS project management practice.

A secondary contribution targeted by this research project is to establish a regional ontology for Information Systems project practice using Heidegger's fundamental ontology of *Dasein*. The regional ontology will also be used to theorise about the as-lived project experiences to improve understanding of as-lived IS project practices.

1.6 Structure of the Thesis

The thesis is a conceptual creation and has no explicit empirical work. While there is no explicit empirical work theories that have emerged from empirical investigations will be interpreted using the regional ontology. The following structure is adopted to present the research undertaken.

Chapter 1 provides a brief background to the research project and gives an outline of the objectives and research process plus an overview of the thesis. In addition chapter 1 gives the motivation for the need to embark on the development of a regional ontology.

Chapter 2 focuses on a literature review of the issues being raised about the practice of IS project management. There will be specific focus on those contributions which relate to discussing, justifying or questioning the adequacy of the underlying theory. Thus by implication not all literature will be reviewed because the focus will be those contributions that discuss the limitations of current practice. Those contributions that accept and promote the status quo will not be purposefully reviewed. These however, will be reviewed indirectly in the literature that questions the status quo which is the prime focus of this review.

Chapter 3 will discuss the epistemological assumptions of the research approach using Maturana and Varela's "Theory of living systems". This research is non positivist, critical interpretive, and as highlighted, has no explicit empirical component. Due to its unconventional nature considerable effort will be plied in this chapter to make the assumptions implicit in the research process apparent. The chapter will provide a discussion of the following issues where x relates to the claims being made with regard to IS project practice:

a) How does the researcher claim to know x?
b) How is it possible to say that the researcher knows x?
c) What is the status or authority of the researcher's knowledge of x?
d) What are the implications to the researcher's knowledge of x by adopting one research procedure over another?
e) Relative status of insider knowledge versus outsider knowledge (x)

Chapter 4 will start with a discussion of existentialism and the concepts of ontology. This chapter will give an in-depth discussion of the concepts that relate to Heidegger's *Dasein*. The chapter will also give an analysis of Bourdieu's theory of practice. In addition this chapter will attempt to fuse both Heideger and Bourideu's work into a regional ontology that defines pervasive structures that give the essence of IS project management practice.

Chapter 5 will start with a discussion of the proposed regional ontology and its implication for IS project phenomena and related project practices. In addition the chapter will then use the regional ontology as basis to explain and interpret recent seminal contributions to

provide corroborating explanations for the regional ontology as well as theorise further about the as-lived IS project practice experiences.

Chapter 6 will conclude and summarise the findings that emerge from this research project. The new insights this research project resulted in will be articulated together with the possible implications these findings hold for IS project management practice, education and research. This chapter will also include a reflective account of the research process and future research potential.

Chapter 2 Review of the Information Systems Project Management Literature

2.1 Introduction

An IS project can be defined as an orchestrated process initiated by a project manager, stakeholders and project workers on behalf of an owner to deliver a valued outcome that is unique and needs to be achieved within predetermined constraints which can include time, scope, quality and cost (Hughes & Cotterell, 2006; G. Richardson & Butler, 2006; Schwalbe, 2006, 2007). Reich, Sauer, & Wee (2008, p. 266) state that successful IS managers learn how to bravely step away from traditional "thou-shalt" forms of project practices to deliver value early by constantly reaffirming and reviewing the value being delivered with the sponsors. Reich *et al.* (2008) do not state explicitly which "thou-shalt" practices practitioners learn to stay away from but it can be inferred that the researchers are referring to practices enshrined in PMBOK. PMBOK is the American National Standard (ANSI/PMI 99-001-2004), the standard adopted by the Institute of Electric and Electronic Engineers (IEEE) and a standard promoted by International Organisation for Standardisation (ISO) for managing software projects (Hodgson & Cicmil, 2006b, p. 38). According to PMBOK, project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements and is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing (PMI, 2004).

Reich *et al.* (2008) state that successful IS project management practitioners tend to make assumptions. A basic assumption project managers make is with regards to the approach; they report that the approach generally followed is adaptive and in need of constant re-planning. Further, they report that such work requires face-to-face interactions instead of being plan-driven and concerned with monitoring and achievement of a plan. This is in accordance with the agile manifesto's principles (Cockburn, 2002a). Agile principles have inspired many software development practices, such as Extreme Programming (XP),

SCRUM, Crystal, Feature Driven Development (FDD), Dynamic System Development Method (DSDM), etc. (Nerur & Balijepally, 2007). These practices have become preferred approaches to delivering development projects, surpassing traditional monolithic water-fall type approaches that rely on a mostly sequential, stage-gate process and artefact production (Germain & Robillard, 2007). Reich *et al.* (2008) also report that successful IS project management practitioners advise that the ethos of the project approach is for teams to be multi-disciplined, organised as simple flat organisations and see the product as something that is co-created with stakeholders. Similarly, Sewchurran & Barron (2008) found that the relationship between the project manager and project sponsor is a crucial determinant of success on IS projects. Moreover, the project manager and project sponsor relationship needs to be an ongoing process of learning about the complexities of the project process and surrounding organisational context. A key characteristic of such a process, reported in Reich *et al.* (2008) and Sewchurran & Barron (2008) is that the traditional view of success based on meeting the constraints of cost, time and scope is considered to be inappropriate. IS projects seem to depend on approaches that target wider organisational goals. Other researchers are reporting similar trends. For example, researchers studying organisation project-driven initiatives report that targeting narrow objectives on projects aimed at innovation are inappropriate and wider organisational goals need to be the drivers for these projects (Martinsuo, Hensman, Artto, Kujala, & Jaafari, 2006; Maylor, Brady, Cook-Davies, & Hodgson, 2006; Winter & Szczepanek, 2008).

These suggestions of what seems to work in practice are different to the plan-driven, role separation, deterministic processes assumed in many textbooks that are used to train IS project practitioners and graduates (G. Richardson & Butler, 2006; Dalcher & Brodie, 2007; Schwalbe, 2007; Fuller, Valacich, & George, 2008). In these texts the best practice approaches of PMBOK are often epitomised as the central core that comprises project

management. The same assumptions are reflected in IS research literature where contributions tend to explicitly or tacitly accept that the core basis of project management comprises PMBOK. A primary ontological assumption made in many studies is that to adequately manage an IS project, extensions to this best practice core are necessary (Summer, Bock, & Giamartino, 2006; Bygstad, Nielsen, & Munkvold, 2008; Napier, Keil, & Tan, 2008). Thus, the enhancements which are found to be necessary for effective IS project management are usually reported in the research literature as specific leadership styles for IS projects; business analysis and modelling techniques for IS phenomena; specific agile development approaches or implementation strategies and governance structures suitable for IS projects.

The literature reviewed in this chapter will show that underlying theory only seems to get questioned in the journals dedicated to project management research such as: Project Management Journal (PMJ), International Journal of Project Management (IJPM) or International Journal of Managing Projects in Business (IJMPiB), etc. The IS journals such as MIS Quarterly (MISQ), Information Systems Journal (ISJ), Information Systems Management (ISM) do not directly call for a review of the underlying theory (Bygstad *et al.*, 2008; Napier *et al.*, 2008; Reich *et al.*, 2008). The best practice core also evades scrutiny when IS project failures are investigated. Frequently, IS project implementation failures are explained in the IS research literature by a lack of proper project planning, poor project management, poor project leadership or incorrect application of project management practices (Kappelman, McKeeman, & Zhang, 2006; Kent, 2006; Nelson, 2007).

The notion that IS projects are different to civil and engineering projects in terms of the final product delivered seems to be accepted but researchers and practitioners also make the assumption that the general project management process is similar (Hodgson & Cicmil,

2006a; Crawford & Pollack, 2007). One illustration of this, discussed above, is the manner in which the IS project management literature is stratified across the disciplines of Information Systems and Project Management. It appears that research in Information Systems Journals is mainly focused on methodological enhancements relevant to IS projects; while the project management research is concerned with the general approach to managing projects. Both these disciplines are multidisciplinary and are themselves reference disciplines to each other (Baskerville & Myers, 2002; Dvir, 2008). Although this realisation seems to exist amongst scholars the research reported in these disciplines exist almost separately.

Project Management research in the main stream has been regarded as a technical discipline or best practice discipline until the 21st century while the IS discipline has for many years realised that IS phenomena are largely social but with technical implications (Byrne & Lotriet, 2007). Ironically, the IS research literature which leans toward the social sciences is assuming that IS projects depend on a project management process that is instrumental and technical. Project Management has traditionally been considered to be a technical best practice discipline while IS phenomena since the mid 1990s have been considered to be mostly social phenomena. A paper by Sewchurran (2008) is an example of an attempt to explicitly merge agile software development practices and project management practices into a “discourse framework”. Due to differences in the underlying philosophy this may seem like a counter-intuitive suggestion; but Sewchurran (2008) does acknowledge that the philosophical assumptions are contradictory and cognisance has to be taken of the large practitioner community which graduates will be required to work with. This chapter reviews the literature across the disciplines of IS and Project Management to understand the state of practice and research related to IS project management. While IS project management is

the focus, the IS project phenomenon is also discussed because these are tied inextricably as the discussion in chapter 3 will illustrate.

There are essentially four core strands to this chapter; and these appear as different sections.

- The first section is dedicated to describing and discussing the emergence of the best practice core of IS project management.
- In the second section an account of what IS project management practice has come to mean to practitioners and other stakeholders is given.
- The third section explores alternative approaches to researching IS projects.
- In the fourth section alternative views of the project manager and project practice are given.

Finally a synthesis of the research literature is given as the chapter conclusion.

2.2 A Description of Project Management

2.2.1 Emergence of Project Management

The first signs of formal project management practice emerged around the 1950s when the program evaluation and review technique (PERT) and critical path management (CPM) were used in engineering, defence and aerospace projects (Crawford *et al.*, 2006). The development of project management as a competence started shortly after this when practitioners identified the need to share methods of working. The standardisation of project management practice started in the mid 1950s with practitioners exchanging practices to advance their profession. Project management has since evolved into a practice which is used globally and has a following in the form of certified practitioners, graduate practitioners

and researchers. There are several standards bodies promoting project management practice internationally.

The Project Management Institute (PMI) is the largest of the Project Management professional associations. PMI originated in North America in 1969, and now has approximately 212,000 individual members. The Australian Institute of Project Management (AIPM), a national project management association had over 6,000 members distributed over eight state and territory chapters by 2006. Several PMI chapters are also set-up in Australia and by 2003 there were PMI chapters in most Australian capital cities with a total membership of 1,500. Relationships between the AIPM and the Australian PMI chapters vary from friendly cooperation to active competition. Unlike Australia, PMSA was essentially formed by members of the PMI South Africa chapter and is far closer and has a more cooperative relationship with PMI. In the UK, the Association for project management (APM) was formed in 1972, and is reported to have more than 13,500 individual and 300 corporate members. APM has developed an independent knowledge standard. The 2006 APM Body of Knowledge is currently in its fifth edition and takes a significantly different perspective on project management than that presented by the PMBOK in terms of both what is considered to be of relevance and how this information is conveyed. The International Project Management Association (IPMA) was initiated in 1965. The IPMA has evolved into a network comprising 30 national project management associations representing approximately 20,000 members, primarily in Europe but also in Africa and Asia (Peter Morris, 2006; Thomas, 2006; Crawford & Pollack, 2008).

Despite the number of bodies that exist, PMBOK has become a de facto international standard for project management knowledge. Because of PMBOK's role as an embedded standard and the large following researchers tend to base their critique of best practice approaches on PMBOK. PMBOK was first published in 1987 as "A Guide to the Project Management Body of Knowledge". Revised and enhanced versions were published in 1996, 2000 and 2004. Across these versions the intended goals of the guide remain constant. The PMI has launched PMBOK with the intention to create a common lexicon for the practice of projects; to put in place a structure for professional development programmes and to provide a framework for the refereeing and selection process for the Project Management Journal (PMI, 2004; Crawford & Pollack, 2007). The emphasis on establishing a common lexicon displays the belief in the assumption that there are pre-existing real world objects, properties and universal laws depicting project management that need to be discovered (Hodgson & Cicmil, 2007).

Project management practice has been constructed by the efforts of a community of practitioners who hold, or seem to hold, similar interests in dealing with the phenomena of project practice as described by PMI's common lexicon. Much of the practice has evolved through writing, reading and discussion between practitioners and academics. Through the development of project practice, interest has also developed in organisational project management. This development has resulted in the emergence of a body of knowledge to guide the practice of organisational project management, the focus being on managing through projects instead of just managing independent project processes. Project management is largely concerned with the management of a project while organisational project management is concerned with management by projects. The growth of organisational project management and project management seems to be evolving in a

dialectical way, since the initial project management body of knowledge influenced the emergence of organisational project management (Crawford, 2006).

In 1996 the PMI issued the PMBOK standard and accompanying certification programs. At approximately the same time, many businesses were looking to information and communication technological (ICTs) solutions to support a more customer-centric, process-oriented organisational structure (Sewchurran, 2008). Companies were striving to become more innovative, less bureaucratic and more responsive to changes in the environment. During the 1990s the external organisational environments were subject to a number of changes that resulted from the global economy shifting from being constrained by manufacturing capacity to an era of abundant or excess capacity, but limited markets to sell products. To align with this paradigm-shift, organisations needed organisational project-driven initiatives. Often, these renewal efforts were called by contemporary names like business process re-engineering (BPR), enterprise resource planning (ERP) and client server computing (Lyytinen & Rose, 2003; Leybourne, 2007). This demand for more innovation coincided with a demand for trained project managers which seemed to be met by organisations like the PMI. Project management became the panacea for organising, initiatives. According to Sahlin-Andersson & Söderholm (2002), one of the attractions of project management as a way of organising is the ambitious promise of project processes being able to deliver both controllability and adventure. This promise assumes that a project's processes are able to provide a learning environment that fosters creative levels to allow for the creation of new knowledge, skills and attitudes. Projects are therefore seen as vehicles to deliver complex products (Hodgson & Cicmil, 2006b). The project success literature however, shows that certified practitioners did not lead to dramatic improvement in success rates (Schwalbe, 2007; Sewchurran, 2008).

The Standish group is renowned for the studies conducted on IT project success (Schwalbe, 2007). Their research reports have become infamously referred to as the Chaos Reports, presumably because these reports showed the chaotic nature of IT projects. The first study was conducted in 1994 and indicated that on average only 16% of IT projects were considered successful. Several repeat studies have since been done. A follow up study conducted in 2002 showed that the number of projects considered successful at that point stood at 32%. This indicated that successful projects have almost doubled since 1994. A study conducted in 2004, however, shows that success rates have fallen from 32% to 29% (Schwalbe, 2007, p. 15). These studies show that there has been moderate improvement, but more importantly the studies infer that on average projects tend to only succeed once in every three efforts. This measure did not present the usefulness of the profession of project management in good light. Since the publication of the Chaos Reports there has been sustained focus on understanding success and failures in this arena.

Researchers and practitioners have conducted post implementation reviews to understand the reasons for these failures and successes. Post-mortems reveal that good project management and effective business leadership were fundamental to achieving success and these were often lacking in initiatives that failed (Kettinger, 1997; Ackermann *et al.*, 1999). Since 1994 the refinement of PMBOK and introduction of formal project management has contributed to marginal improvement in project success rates. The Standish groups' research shows that despite ongoing refinement there has not been any dramatic improvement; on average it seems that only one out of three projects could be considered successful. Nelson came up with similar statistics in the study of 99 projects in North America (2007). While the accuracy of these statistics can be debated and presented in more stratified ways, the wider situation of concern about the state of knowledge the

discipline holds about project phenomena and espoused theories of managing projects stands out.

2.2.2 PMBOK Definition of Project Management

According to the PMBOK definition, “Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements”. The standard further states that project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing. The project manager is at the helm of the project process and is responsible for accomplishing the project objectives. Management of the project according to the PMBOK standard entails:

a) Identifying requirements
b) Establishing clear and achievable objectives
c) Balancing the competing demands for quality, scope, time and cost
d) Adapting the specifications, plans, and approach to the different concerns and expectations of the various stakeholders (PMI, 2004).

Additionally, project managers need to respond to uncertain events or conditions that occur and have a professional responsibility to project stakeholders which includes customers, the performing organisation, and the public. Project team members who are PMI members and/or PMPs are obligated to abide by current versions of the defined code of ethics. According to the standard, the spirit of the process is that the problem and solution are progressively elaborated. By implication, many of the processes within project management are therefore iterative because of the existence of, and necessity for, progressive elaboration in a project throughout the project’s life cycle. That is, as a project management team learns more about a project, the team can then manage to a greater level of detail. The term “project management” is sometimes used to describe an organisational or managerial

approach to the management of projects and some ongoing operations, which can be redefined as projects. Such implementations are also referred to as “management by projects” (PMI, 2004).

The initial phase of any project is called the project definition phase. The output of this phase is the statement of work (SOW) which specifies the goals and objectives of the project. The SOW gives conceptual clarity on the scope of the project and allows for the development of a work breakdown structure (WBS). The WBS allows for the assignment of resources, planning of budgets and estimation of schedules. The WBS provides the conceptual schema upon which much of the schedule optimisation, performance management and earned value measurement are performed. The WBS is constructed by a task decomposition process. Often prior experience is used as a basis to structure and estimate the effort. The tasks are logically chained into a network and optimised to determine the ordering based on technical precedence, business readiness, business impact and resource usage, etc. There are a number of techniques used in this process: PERT, CPM, network diagrams, critical chain scheduling (PMI, 2004; Schwalbe, 2007).

The project network enables execution of the project to be tracked and monitored. Optimisation of the network of activities occurs throughout the duration of the project as actual performance is tracked and the changes to project environment are factored in. Feedback on task performance and resource usage is tracked through reporting systems. The initial milestones and critical paths may be revised based on reviews that take place. These activities constitute the management of execution and monitoring of the project. By making progress visible through reporting it is assumed that workers become conscious of effort expended. Reporting also assumes that task estimation and progress reporting have reasonable levels of accuracy.

Söderholm (2008) makes the following observations about project management. Firstly, he states that projects are contextually dependent and continuously contingent on environmental relations; and secondly, one of the general responsibilities of a project manager is to protect the project from environmental disturbances and project members from outside distraction. Typically, this is often done by governing the type, frequency and content of environmental contacts (Söderholm, 2008, p. 84). Often, in this context of governance, the project manager needs to turn environmental issues into planned events and qualify them as being subject to risk. Moreover, environmental interactions are scheduled to take place at specific points in time, for example at initiation, stage-gate review occasions and at termination. In addition, the project management governance model treats the environment as a black box; the tools shed light fully on the project itself while leaving the environment to be considered as critical success factors to enable project execution (Söderholm, 2008, p. 80).

2.2.3 Evolution of the Organisational Project Management Standard

Organisational project management approaches have become very popular in the 21st century (Maylor *et al.*, 2006). There are claims that this view is beginning to surpass the popular process view of organisations which surpassed the functional view. A business process is defined as a set of inter-related activities designed to transform inputs into outputs in order to achieve a business goal or objective. It could therefore be said that this is much like an unconstrained and bland view of project management. During the 1990s a business process view of organisations was considered to be a more effective way to organise than the traditional functional groupings. In the 21st century the view that is receiving significant attention is the project-driven organisation. The promise of project management has resulted in what has been termed by some researchers as a growing “projectification” of society (Maylor *et al.*, 2006). Maylor *et al* (2006) refer to Organisational Project

Management (OPM) as *programmification*. *Programmification* can be executed through a chain of interlinked projects, a portfolio of projects taking place at the same time, or as a network of interrelated projects (Maylor *et al.*, 2006, p. 670). Moreover, *programmification* can also be executed as a portfolio of programmes. Irrespective of the form of programmification, it appears that optimising resource usage is fundamental to achieving results. To deal effectively with resource planning and usage, the United Kingdom's government promoted the idea of OPM through the features in PRINCE2 and the concept of managing successful programs (MSP) (Crawford, 2006, p. 76). A change in focus to accommodate *programmification* can also be seen in the activities of the PMI. In 2003, the PMI released the OPM maturity model standard (OPM3). OPM has led to extensions to the project management body of knowledge. A project management office (PMO) and project portfolio management (PPM) are viewed as crucial establishments to facilitate an OPM approach. The primary task of the PMO is defined as one of promoting standardised processes and procedures to initiate, manage, monitor and close project initiatives. The PMO is also responsible for ensuring training in the prescribed methods (Thiry & Deguire, 2007, p. 650). Project portfolio management is defined as the process of estimating, allocating and monitoring the allocation of resources to programmes and projects with the aim of maximising the value for stakeholders (Thiry & Deguire, 2007, p. 650).

Crawford (2006) discusses a study of an organisation implementing an OPM approach which shows differences between the actual implementation and the prescribed theoretical models that are proclaimed to be necessary to institute OPM. The specific study is of an organisation that undertook to develop OPM capability over the period 2000 to 2004. One of the conclusions drawn from the study is that OPM matures opportunistically through direct focus on the innovations that are targeted (Crawford, 2006). Another view of organisational project management prescriptions like OPM3 is that the early adopters of OPM approaches

were free to institute structures to make the approach work in an optimal manner. Later adopters, however, have the normative pressure of complying with the practices of earlier adopters. Such pressure does have adverse effects and Martinsuo *et al.* (2006) proclaim that the normative pressure influences the extent to which the organisational innovation will succeed (Martinsuo *et al.*, 2006, p. 88).

Matinsuo *et al.* (2006) analysed the adoption of OPM using institutional and innovation theories. They propose that project-based innovation is a form of organisational innovation. The drivers that influence the adoption of an innovation may differ across organisations, but may be linked to the timing of the innovation. Organisational innovations tend to result in changes to the social and technical systems of organisations. Thus OPM may result in new methods, structures, behavioural patterns and values. Organisations choose to adopt a project-based management approach to counter internal complexity and external competition (Martinsuo *et al.*, 2006).

OPM is considered to be a form of organisational innovation that impacts the organisation in a systemic way. Thus OPM is found to be focussed on broader customer and business goals instead of being limited to just scope, cost and time (Martinsuo *et al.*, 2006). An organisational project strategy is dynamic and unfolds in a dialectical manner with the affected stakeholders and project teams (Artto, Kujala, Dietrich, & Martinsuo, 2007). OPM has therefore become focussed on newer aspects such as value management and benefits realisation, instead of the traditional iron triangle comprising scope, cost and time. In the context of OPM it seems the traditional engineering view of projects is being surpassed by a newer perspective that focuses on value creation for a number of stakeholders. The traditional production view defined by measures that focus on specification, cost and time

need to be reframed in an OPM approach to include the dimension of value (Winter & Szczepanek, 2008, p. 103).

Maylor *et al.* (2006, p. 668) report that although *projectification* is seen as a panacea to implement organisation strategy, their research shows that the processes are not necessarily more reliable, nor are outcomes more definite. There does, however, appear to be new research opportunities that result from the organisational changes within organisations that are moving toward forms of *programmification*. Similarly, Thiry & Deguire (2007) claim that many of the traditional problems experienced with project management remain problems when applied at an organisational level. There are a number of newer project challenges with OPM. One of the new issues reported is the difference in control and coordination. A project approach is known to depend on autonomy, while organisational approaches depend on wider command, control and cooperation within the organisation (Thiry & Deguire, 2007). Researchers are also concerned about the traditional models for job satisfaction and employee development and are reviewing human resource practices with the aim of developing practices that are appropriate for pursuing an OPM approach. This research focus is interesting because it highlights the realisation that people need to cope with a different set of influences instead of mastering a functional competence. Aitken & Crawford (2007) observe that the maturity of the project management processes in an organisation has a direct influence on stress levels of project managers and also on their ability to cope. They show that organisations who have a greater maturity of their project management processes offer a more conducive environment for project managers to deal with stress effectively. From these research efforts it can be inferred that there is implicit recognition that the move to project-driven organising affects more than just the project manager and the project management process (Huemann, Keegan, & Turner, 2007)

Crawford (2006) emphasises an important issue when she states that the theoretically different approaches that are adopted for projects and OPM is a result of their evolution and there is a great chance that the differences will become less significant because the same community is responsible for the development of these practices. The community of practitioners remain driven by standardisation and universal ideals which have seen the popularisation of PMBOK. These ideals are bound to pull these practices toward a general standard. The formation of professional standards and certification assumes that there is a certain level of similarity in the actions taken by practitioners who are members of a certified group. By implication then, there is a certain amount of generic knowledge, skills and practices that are applicable to most projects. Several researchers looking at OPM, such as Maylor *et al.* (2006) and Thiry & Deguire (2007), claim that although the focus on *programmification* has extended the definition of a project considerably, the typical concerns identified with *projectification* in 1995 are still the primary issues of concern in OPM.

From the above it can be said that the organisational approach to project management is largely made up of the standard project management approach. The standard put forward by PMBOK is intuitive, rational and relatively easy to grasp. Newer challenges do emerge when a project approach is applied at an organisational level to implement strategy but more significantly the traditional problems remain. These problems are discussed further in the next section.

2.3 Consolidating the primary problems with Project Management theory

This section is dedicated to consolidating the primary problems that have been identified with project management practice into a coherent discussion. PMBOK emerged as a result

of practitioners and academics sharing ideas to improve project management practice. The process of building the practices allowed ad-hoc practices which were developed and used on an as-needed basis to become the basis of prescriptive best practices. Practices that started out as emergent and flexible have become prescriptive, and the way of doing things as the interest in managing projects became formal (Thomas, 2006, p. 92). Thus, the fundamental existence and nature of a project is largely taken for granted. Literature on project management is either presented as prescriptive "how to" practices on how to manage a project, or descriptive tales that detail how projects have been experienced (Thomas, 2006, p. 90). Hodgson & Cicmil (2006a) and others claim that the extent to which a project process is reified gives a false sense of predictability, controllability and versatility. Such a simplified view of projects has played a role in fuelling the adoption of projects as organising instruments, because the number one priority in modernity is to reduce uncertainty. Hence, project management has become a compelling choice because it strives to make non-normal work, both normal and understandable (Townley, 2002).

The assumption that the project has a pre-given universal form gives a false sense of expectation and controllability. Project participants thus see the project as a goal-oriented system of activities and structures, where project progress depends on progressive elaboration which is achieved by rigidly following the project life cycle steps. The belief that completing the specified templates, using the project life cycle as a decision making tool, and following the project life cycle gives a sense of instrumentality with regard to the project life cycle. It is suggested that these assumptions have bred the expectation that good project results correlate strongly with diligent application of the project life cycle (Cicmil, 2006; Cicmil, Williams, Thomas, & Hodgson, 2006). The conviction that the project management process needs to be approached in an instrumental or rational manner has also led to the belief that project managers are rational technicians who skilfully have to

apply tools and techniques and navigate through the stages of the project life cycle to ensure that a piece of work is completed on time, within budget, and to an agreed specification. These assumptions are often described as normative, instrumental, rational and objectivist (Cicmil, 2006; Cicmil *et al.*, 2006).

In general, what gets defined as a project is a “non-normal” set of unique tasks which are highly uncertain in total but can be composed of relatively known stages. Applying a project approach thus leads to assumptions that work can be planned into measurable tasks and linear progress can be expected in progressing with the tasks. In addition, by applying a project approach, innovation and knowledge become commodities, and it is assumed that effort toward these can be estimated and tracked with reasonable accuracy. These assumptions amount to making non-normal work, both normal and understandable. These assumptions are taken as true to such an extent that project failure has becomes attributable to a faulty implementation of the practices, instead of adopting a problematic set of project practice assumptions (Thomas, 2006, p. 92).

2.4 The Seduction and Side Effects of Standards

Standards, it is argued, constitute ‘rules about what those who adopt them should do’ (Brunsson *et al.*, 2000, p. 2 cited in Hodgson & Cicmil, 2007, p. 433) and the creation of standards, it is argued, enables ‘control at a distance’ ((Law, 1986; Yates, 1989) cited in Hodgson & Cicmil, 2007, p. 433). Standardisation then provides alternative means of regulation. The adoption of standards is a voluntary process but adoption is based on the perceived benefits. Generally, such marketing will target displacement of competing standards, concerns about rigid definitions or the belief that no standard is necessary. With the introduction of a standard, new conceptual phenomena emerge and become the objects of interest for researchers and practitioners. Such interest brings the objects into existence

and gives these objects a sort of naturalised existence. Over time standards become embedded into daily practices and encourage compliance to various forms of behaviour. As a result of this reification the existence of the objects is no longer seen as a product of intellectual endeavour, but within communities is given objective existence. Hodgson & Cicmil (2007, p. 434) show how the objects of knowledge in project management have in a similar way been constructed by the emergence of the PMBOK standard. If standardisation is successful, like it has been in the case of PMBOK, an epistemic community emerges who is united by the belief in the model, and committed to effecting wider dissemination and conformance.

The more naturalised the objects are, the more invisible are the contingent, historical circumstances of their origination (Hodgson & Cicmil, 2006a). This is probable reason why the project management research community has not looked at the standard critically until the 21st century. Generally, a standard is a set of agreed-upon rules to guide the production of textual or material objects. Alternatively, a standard can be a measure, devised by general consent as a basis for comparison against which judgements might be made with regards to levels of acceptability. Standards can be further defined as descriptive, normative and prescriptive. Descriptive standards give facts, details or particulars, e.g. a document that describes the characteristic symptoms of a flu sufferer. Normative standards provide guidelines to be used as a basis for measurement, comparison or decisions. Prescriptive standards define a particular way of doing something, e.g. a document that specifies a two week course of specific antibiotic for treatment of sinus infections (Duncan, 1998, p. 57; Hodgson & Cicmil, 2007, p. 434). The word standard has an official ring to it. Through the effects of modernity societies have come to prefer uniform rules and firm expectations; this manifestation shows itself in the extent to which standardisation has permeated people's lives through time zones, currency rules, etc. The notions of certification and standardisation

in project management are assumed to hold the traditional benefits that are associated with standardisation. Perhaps this is another reason that there has not been a critical evaluation of the role of standardisation in project management practice until the 1990s. Although standards have such regulatory implications, most standards emerge from voluntary processes. The development of the project management body of knowledge which is considered to be a standard for project management is such an example. This initiative was started by a community of practitioners who saw the need to jointly improve their practice (Crawford, 2006).

2.4.1 Perceived benefits and effects of standardisation and certification

The recognition of competence in project management through certification is popular because it represents a number of benefits for project management practitioners and customers who require project management services. Firstly, standardisation should protect public welfare by the assurance of a minimum quality of service (Crawford & Pollack, 2007, p. 87). Secondly, certification has traditionally provided a public way in which practitioners can demonstrate a level of competence to find work, and for their companies to sell their competence to work on projects. Through such symbols project management certification legitimises the profession and gives practitioners a professional development path (Crawford & Pollack, 2007, p. 88). The arguments for standardisation and certification are good when one considers the above benefits that were being targeted. It can be argued that both practitioners and the society have benefited from the PMBOK standard.

Morris, Crawford, Hodgson, Shephard, & Thomas (2006), Sewchurran (2008) and others question the usefulness of PMBOK certification by pointing out that the popularity of PMI's certification program continues to grow despite a lack of significant improvement in IS project success rates. These researchers claim that among the factors which are contributing to

PMBOKs popularity is the demand created by practitioner communities and the certification process. They draw attention to the fact that certification does not guarantee performance. Certification merely signifies that practitioners are acting within the strictures of perceived best practice and, more significantly, certification has the side effect of obliging practitioners to ascribe to a set of work practices, routines and beliefs (Hodgson & Cicmil, 2006a). Obligation can ultimately result in the belief that failure is due to misapplication of adopted prescribed practices.

2.4.2 Candidate application areas and project management capability

Since the 1990s project management approaches have been applied to a number of newer contexts or application areas. It is therefore no longer appropriate to assume that all project managers manage projects in comparable ways (Crawford & Pollack, 2007, p. 89). This brings into focus the paradox between project uniqueness, as projects are commonly defined, and the fundamental assumption of project similarity claimed in the bodies of knowledge. An interesting quote to capture this paradox of project uniqueness and conceptual similarity is given by Crawford and Pollack (2007:94):

> *The water is always changing, moving, making different noises, and yet is still a river, maintaining similarity of form over time.*

Fabi and Peterson in 1992 found that the project management industry would rather train generalists than specialists (cited in Crawford & Pollack, 2007). Should the similarity between projects be the most significant factor to structure practitioner education around? Probably not, as Crawford and Pollack (2007) argue. Given that the body of knowledge is advanced by a community of practitioners, it is likely that this dilemma of uniqueness and similarity will persist because some people only work on similar projects and don't encounter

the different knowledge requirements for various project types (Crawford & Pollack, 2007). There will therefore always be a group who do not experience projects where the specific knowledge requirements of different project types make the overall similarities between projects inconsequential.

Project management failure appears to be most prominent in the areas where the problems are characterized by high degrees of organisational change and intangible end products. A possible reason cited by Crawford *et al.* (2006) is that these projects depend on participation, reactions and interactions of people for success. Another reason citied is that these projects are directed at organisational improvement and change which has to go beyond the initial construction phases to realise project objectives. Implementation affects routine practices of people. Such changes therefore result in complexities associated with affecting the social and cultural structure of organisations. Project management practitioner development which remains entrenched in tools and techniques has not changed as substantially as the range of problems project management applied to (Crawford *et al.*, 2006).

The development of the project management practitioner is pre-eminently focused on roles of the project team and on the explicit knowledge that is required (Crawford *et al.*, 2006). This focus is counter-intuitive because, although projects have similar phases, projects are defined as a new undertaking. Hence, project work is not supposed to be solely dependent on functionalist normative behaviour. This emphasis on knowing is misplaced on projects characterised by intangible end-products because there should be emphasis on coping and learning in the complex environments practitioners work in (Cooke-Davies, Cicmil, Crawford, & Richardson, 2007). Perhaps, due to the process of simplification, and the need to support practitioner development and the transferability of practice, the body of knowledge has been

simplified and generalised. This commoditisation has resulted in a discourse that does not offer much to the practitioner immersed in a project management role because practice is typically characterized by ambiguity, complexity and uncertainty. These concerns have resulted in calls for theory that help understand the conditions and circumstances that lead to both functional and dysfunctional behaviour instead of just specific advice that assumes a stable social world (Sauer & Reich, 2007).

Several other suggestions to improve project management follow in the next section.

2.5 Building the case for Alternative Research Methods

While many praise the virtues of project organising, others like Fournier and Grey (2000) express concern that this growing "projectification" of society is perhaps another way to increase control of individuals through ideologies of efficiency and "performativity". Similarly, Söderholm (2008, p. 81) points out that a narrow looking ontology may well be the prescription guiding the ambitions and rational aspirations of practitioners while it effectively shields the more challenging observations. Söderholm and others therefore do not accept the best practice models as a starting point to define ontology which subsequently guides investigation. The paradox of growing project popularity whilst there is no simultaneous significant improvement in project success rates is often raised; this may be another sign that project practice is underpinned by an incorrect underlying theory.

2.5.1 How PMBOK is sustained as a prescription of reality

The paradigmatic dimensions of what is regarded as important to the execution of a project and worth focussing on have been largely set by PMBOK and the practitioner community. PMI presents PMBOK as a universally applicable ontology for project management. Thus,

concepts such as scope, critical path and milestones, etc. are given as primary concepts that represent the essence of project practice. Through the common lexicon, objects defined as part of the PMBOK standard are privileged to pre-exist in the experience of a project. Since the mid 1990s researchers have been calling for a repositioning of this paradigm (Packendorff, 1995; Hodgson, 2002). One of the reasons cited illustrates that the origins of project management continue to have a strong role to play in shaping the project management profession (Whitty & Schultz, 2007).

The professionalization of project management influences practitioners in an ideological manner. The professional spirit of the discipline acts as a conscience, demanding behaviour that is consistent with the assumed professional identity. Through the professional identity of the subject, control of subject behaviour is achieved through self disciplinary reflexive forms. This is not necessarily a bad thing for project practice if the best practice is adding benefit. The problem within project management is that this is experienced as an onerous and oppressive professional identity to hold (Hodgson, 2005, p. 58). In a study undertaken by Hodgson (2005, p. 63) in the banking industry, project managers reveal that after years of experience they acquire the wisdom to break with best practice and view being professional as being able to reason about their non conformance. This implies that as a novice one has to be professional by confirming rigidly, while when one is experienced, being professional is about being able to reason about non-conformance. This shows the conformance pressure project professionals are subjected to.

PMBOK encourages a mechanistic and fragmented approach to project execution. Such emphasis tends to result in rote application, job fragmentation and bureaucratic control, and diminishes the role of judgment, innovation and coping which is needed to apply knowledge in different contexts (P. Morris *et al.*, 2006). The ethos of the PMBOK project management

process does not give recognition to the contingent and situated nature of the project execution process that prevails during practice (Hodgson & Cicmil, 2006a). In such a context the facilitating environmental conditions need to be created and a lack of such conditions is pointed out to explain failure. However, despite the number of claims of a lack of correlation between the PMBOK prescription and actual project experience, project certification remains popular and is sustained by the aura of specific language, terminology and the seduction of adhering to best practice and being professional.

Contingent or deviant practice in this paradigm is conceived as non-conformance, unprofessionalism or an inferior approach despite the possibility of achieving meaningful results. With such reasoning progressive elaboration of projects is bound to be measured by the number of steps in the process that are completed, or which templates have been used (Cicmil, 2006; Cicmil & Hodgson, 2006). Hodgson & Cicmil (2006a) claim that PMBOK shows a distinct tendency toward a Taylorist direct control by emphasising intensive surveillance, heightened visibility and accountability. Pollack (2006) reaffirms this by asserting that PMBOK focuses more on reductionism and creating the idea of control than on learning because the philosophical underpinning assumes that human destiny is controllable. Hodgson (2005, p. 56) highlights that despite all the claims of PMBOK's suitability to discontinuous, flexible work in the postmodern era, the body of knowledge is still underpinned by instrumental rationality, predictability and control. These strategies are more suited to a 19th century view of an organisation (Hodgson, 2005; Pollack, 2006).

There are coherent themes in recent research to accept the assertion that the popularity of PMBOK has been partly orchestrated by the agency of PMI and the standardisation initiatives that have arisen. Moreover, it can be inferred from the discussion that the popularity of PMBOK is more a result of agency, than a result of project execution being

solely dependent on the instrumental capability of the best practices that constitute the PMBOK process and knowledge areas. This chapter discussed a number of suggestions which call for the discipline of project management to move away from tools and techniques towards a more behaviourist stance. By implication then there has to be a move away from a positivist epistemology to one that is more interpretive (Cicmil, 2006). Formulated differently, there has to be a move from a view of the world where the world exists independent of human action, to a view of the world where reality is socially constructed based on individual and group perceptions (Leybourne, 2007, p. 62).

2.5.2 Arguments for research to be critical and non positivist

Researchers often proclaim that the option to study a management subject in a particular way implies a philosophical choice about how the empirical data or knowledge is organised (Cicmil, 2006). The philosophical assumptions of objectivism, instrumentality, and normative behaviour have predominated project management research and have led to a marginalisation of the complex social and political processes. The phenomena have been reduced to simplistic critical success factors, leadership styles, soft issues, etc. (Cicmil, 2006; Cicmil & Hodgson, 2006). It is relatively easy to infer that the debate about finding a new lens has to trigger thought about alternative research philosophies and approaches. The positivist epistemology perpetuates the belief that managers face an objective reality that can be controlled through instrumental application of methods, tools and techniques in a value-neutral manner. The consequence of accepting these assumptions has been the progressive refinement of PMBOK and other best practices and the acceptance that project management research is only about the definition, refinement and dissemination of best practice (Cicmil & Hodgson, 2006).

There is growing awareness that projects are context specific and exist in open systems. While there seems to be such wide acceptance, research methods continue to overlook this (Smyth & Morris, 2007). To draw attention to this oversight, Bredillet makes a number of editorial suggestions in the Project Management Journal (Bredillet, 2005, 2006, 2007). He calls for further research on identifying modelling techniques that improve understanding of project experiences so that project practitioners of future projects can reuse the analogies and archetypes to explore reason and act in similar situations. Similarly, Smyth & Morris (2007) argue for a critical realist perspective to give more consideration to the context the research results emerge from, instead of just being interested in generalising outcomes.

Cicmil and Hodgson (2006) call for more researchers to adopt a critical stance. As motivation, they advise that researchers are concerned with issues that can only be investigated if the effects of traditionally accepted norms are neutralised and there is a broadening of the paradigm as well, to include those issues which have been marginalised because of the predominant positivist ontology implicit in contemporary project management research. In accordance with the suggestion to undertake critical research, these researchers put forward the following three tenets which critical work should share. These tenets they claim are derived from the work of Weber, Braverman, Derrida, Latour, Bourdieu, Baudrillard, Foucault, Habermas, Bhaskar and others. Firstly, according to Cicmil and Hodgson (2006), critical research requires "non-perfomative" intent. This tenet argues that issues of morality, ethics and equality are at least as important as contemporary measures of effectiveness and efficiency. This aligns well with the concerns raised by Fournier and Grey (2000) who express concern that the growing "*projectification*" of society increases control of individuals through ideologies of efficiency and "*performativity*". The second tenet suggested by Cicmil and Hodgson (2006) is that there must be intention to "Denaturalise Organisations and Management" by challenging the notion that the current way in which

organisations, economies and society is organised is natural and inevitable. This tenet argues that the status quo is a consequence of the prioritisation of the agenda of certain social groups, and benefits these groups at the expense of others. The third tenet suggested by Cicmil and Hodgson (2006) is that critical research aims to "Prevent or highlight oppression and exploitation in society and organisations". This tenet is linked to the second tenet and aligns with the sense of disillusionment that many practitioners and academics feel because the discourse promoted in the public domain does not correlate with the lived experience encountered on projects. The restriction of project management's role to the control and monitoring of contemporary issues of efficiency (time and cost) and content (scope of work) has resulted in focusing most research toward critical success factors and refining the progressive elaboration process. Research contributions up until the 21st century mostly took the form of prescribed best practice and role structuring (Smyth & Morris, 2007). This prescribed discourse has resulted in the exclusion of other discourses which characterise management practice.

2.6 Arguments for Researching the "as-lived" Practices on Projects

IS Projects are a social construction; that is, they form and shape experiences and expectations (Linehan & Kavanagh, 2006). Thus, depending on the extent to which a project mindset is institutionalised, explanations of expectations and experiences are bound to be influenced by the institutional effects. Due to the popularity of PMBOK's narrow best practice ontology, accounts of actual practice have been restricted. There is therefore motivation to broaden understanding and researchers are arguing for deeper insight into what actually happens. Cicmil *et al.* (2006) argue for researching the actual lived experience on projects to complement and challenge the traditional view of the project manager as the

professional, thinking, purposive, decisive and rational actor. The research agenda promoted by Cicmil *et al.* (2006) calls for researchers to assume that actual project processes are complex social processes at the various levels of project working. They believe that such an analogy is more reflective of the work and therefore has the potential to create relevant knowledge for both academics and project practitioners to improve understanding of project work. They define a related research agenda as follows:

> *Researching the actuality of projects, has to consist of 'gathering, analysing, and disseminating knowledge about people working in concert with things, technologies, and each other and the means through which these relations are coordinated and controlled, for what ends* (Clegg and Ross-Smith (2003), quoted in Cicmil *et al.*, 2006, p. 676).

Söderholm (2008) puts forward the metaphor of a temporary organisation as an alternative to the best practice models. In accordance with Cicmil *et al.* (2006) he makes the suggestion that the phenomenal domain of project management needs to be considered as contextually dependent and continuously contingent on environmental relations. Bredillet (2008) also builds on the temporary organisation metaphor when he suggests the notion of schools of thought to allow many perspectives to appreciate the phenomenal domains relevant to project management. He discusses legal, behavioural and business perspectives of the project as a temporary organisation.

The temporary organisation analogy was initially put forward by Packendorf (1995). Packendorf claimed that:

> *Projects should be researched in terms of culture, conceptions, relations to the environment, longitudinal processes, etc., rather than simply as goal-fulfilling subsystems whose raison d'être is provided by a decisive and strategically*

> *aware super-system. In short the project is a temporary organisation* (Söderholm, 2008, p. 326).

With the temporary organisation metaphor, Packendorff tried to induce a change in focus from the traditional model of structuring the process through planning and controlling to cause a certain organising pattern, to a model that views individual actions as the result of co-creation between agents and wider structural forces. The temporary organising perspective implies that the actions of individuals need to be the basic elements which can together constitute a process. Packendorff emphasised that what is to be studied is the temporary organising process; that is, the deliberate social interaction occurring between people working together to accomplish an inter-subjective determined task (Packendorff, 1995, p. 328). Such a focus of studying action systems made up of people means investing less energy into studying what is to happen, and more into what is actually happening. Further, it is the enactment of the individuals rather than the behaviour of the individuals that is of interest. And instead of linear and causal relationships a relational expectation should be the focus (Packendorff, 1995, p. 330). The adoption of relational expectations implies that there is ongoing learning which influences subsequent actions and expectations. Packendorff (1995, p. 328) offers the relational model in Figure 2 to describe a project as a temporary organisational system.

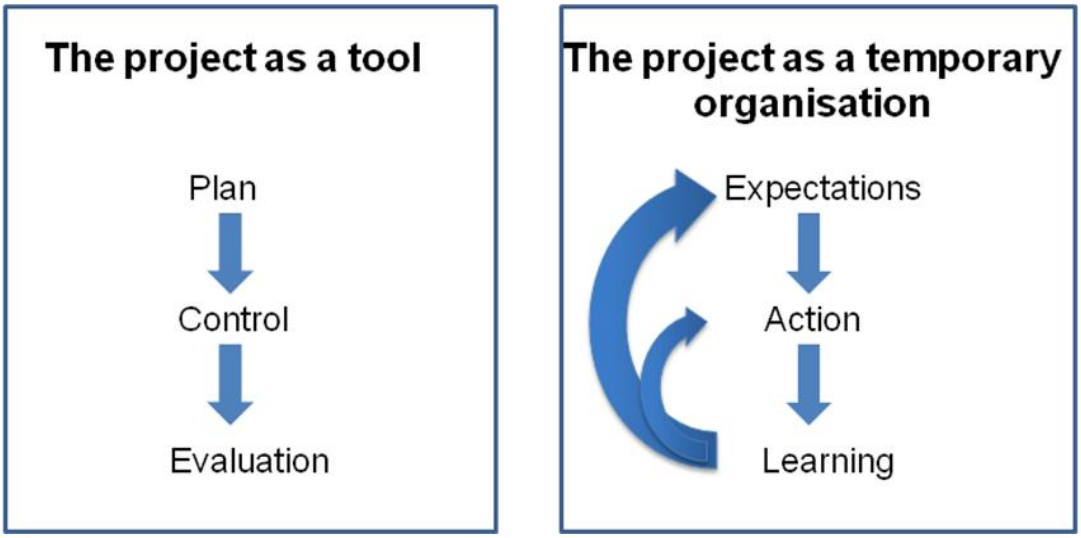

Figure 2: Comparing project analogies of tool and temporary organisation (Packendorff, 1995:328)

The popular "tool" metaphor only emphasises the perspective of the project manager or owner and implies an instrumental approach. Packendorff predicted that future project work would allow organisations to release the creative forces within themselves; instead of planning and controlling there will be more of a need to enhance participation. Packendorff also predicted that key terms such as learning, participation, renewal and innovation would become more common in project management, as they have been for years in modern organisation theory. The temporary organising metaphor implies that project work is incessantly enacted by individuals continuously learning by experience and expecting more learning.

T.Cooke-Davies *et al.* (2007) take these suggestions forward by offering the analogy of complex responsive processes of relating (CRPR) as a lens to appreciate the as-lived project experience. With this analogy they draw attention to the transformative nature of communication and other forms of interaction. Interaction in project settings therefore has the effect of perpetually reproducing individual and group identity and the project is

constituted of individual agents being enacted by the wider institutional structures and recreating these structures on a continual basis. The CRPR perspective assumes that all actors including the project manager are already involved in the project and are subject to the daily effects of existence. Thus, there is no stepping back and making rational optimal choices (Cooke-Davies *et al.*, 2007). The effects of daily existence are discussed further in the next chapter. The CRPR perspective is explained in more detail in chapter 5.

The suggestions by Packendorff (1995), Cicmil *et al.* (2006), Bredillet (2008), and Söderholm (2008) are similar in certain aspects. For instance, they all imply that the unit of focus in projects is an actor and what should be studied is the enactment of the actor by the contextual factors of the temporary organisation or project context. Moreover, all the contributions highlight that the perspective project practitioner's hold of the project influences the empirical world that is accessed. Further, the conception of the project manager as rational and controlling the project process or using specific knowledge, is also dispelled. The following section reviews other conceptions of the project manager and project process that have emerged to rival traditional perceptions.

2.7 Alternative Views of a Project Manager and Project Practice

This section intends to cover other views of project management practice and the project manager that have emerged while the debate about a new lens has been taking place. For example, Osei-Bryson, Dong, & Ngwenyama (2008) note that there is a lack of research investigating the role of management in ERP implementation. Much of the managerial research on ERP implementation has been prescriptive or normative focusing on what would be considered 'best practice' for successful implementation of ERP systems (Davenport, 1998; Besson & Rowe, 2001 cited in Osei-Bryson *et al.*, 2008). Prior to delving into these

alternatives a brief account of management is given because project management inherits many of the ideals associated with management.

Peter Drucker was the first author to define management as a practice and a discipline. Drucker can therefore be considered a founder of the discipline of modern management. Management has been practiced for centuries prior to Drucker's contribution, but Drucker was the first to present the discipline as one that can be taught and learned by those interested in improving effectiveness and productivity (Drucker & Maciariello, 2004). Drucker broadly defines management as an organ of society charged with making resources productive for the economic advancement of society. Management therefore has to reflect the values of society. Drucker believed that if management was unsuccessful then society will be reduced to totalitarian tyranny because management lives, works and practices in and for an institution in which a human community is held together by a bond: the work bond (Drucker, 1993).

2.7.1 Drucker's view of management

In defining the domain of management Drucker felt that management deals with the practice and application of the fundamentals of knowledge, self-knowledge, wisdom and leadership. Thus management has to draw on the humanities, the social sciences, psychology, philosophy, economics, history, the physical sciences and ethics. This expansive set of knowledge influences has to be focused on achieving effectiveness, and results in the various contexts to which management is applied: implementing an enterprise resource planning system, executing a business change initiative, designing and building cars, teaching a student or uplifting a community. Furthermore, Drucker argued that management should mostly be about cultivating a managerial attitude to create a responsible worker. A responsible worker is not only accountable for specific results but also has the responsibility

to produce these results, and finally is committed to the achievement of these results as a personal achievement.

Project management has inherited many of the ideologies of management and can thus be regarded as a more specific type of management, like human resources management, marketing management, operations management, etc. The assumption thus far is that project management is a competency that can be included in other forms of specific management practices. Drucker adds that a key concern of the practice of management is team work and the harmonising of team member strengths and weaknesses to ensure the optimal overall output of the team.

Information systems projects are initiated to introduce innovations. These types of projects are dependent on collective learning and the role of the Project Manager in such projects requires ensuring that all members of the team benefit from the participative learning system despite their differences (Bourgeon, 2007, p. 414). Although learning in a project setting is fundamental, intentionally establishing a learning environment is very difficult. Sense (2007, p. 405) remarks that conditions to support a learning environment are random, opportunistic and a coincidental act that is grounded in experience. Such complexities do cause problems in transferring knowledge from one project to the next. In addition, a lack of structure also poses problems for defining the ability of a project manager. Orchestrating a learning environment is fundamental in projects which exist to introduce an innovation. A key focus of project management, especially since the mid 1990s, has been the installation of information systems or business change initiatives which are mostly about innovation.

Drucker's approach to management differs from Taylor’s thinking because Drucker believed that the primary role of management is the establishment of the managerial attitude instead

of emphasizing direct control through intensive surveillance, heightened visibility and accountability. In prior discussions it was highlighted that PMBOK shows a distinct tendency toward Taylorist direct control, intensive surveillance, heightened visibility and accountability. In the Taylorist approach to management, power is used in the manner in which it is conventionally understood, as something that controls by prohibition and rank. In the modern management era, characterised by Drucker's influence along with Peter Checkland's soft systems thinking and Peter Senge's systems thinking, power is being used in a much more implicit, tactful, and circumspect sense. A deduction can be made from these efforts that management is about inspiring an organisation pattern. In the systems thinking era power has been used to change perception, introduce subjectivity, stimulate motivation, and invoke passion and commitment. All of these are done to cultivate a managerial attitude, as advocated by Drucker (Senge, 1990; Checkland & Holwell, 1998; Checkland & Howell, 1998; Checkland, 1999; Checkland & Scholes, 1999; Sewchurran & Petkov, 2006).

2.7.2 Project practice as a resource-constrained game of communication and innovation

Agile practices have emerged as a popular approach to conduct software development (Baskerville *et al.*, 2008; Kautz *et al.*, 2008a, 2008b). These practices are being preferred over artefact-driven, sequential processes such as the rational unified process (RUP) and plan-driven approaches (Cockburn, 2002b). All the agile practices tend to share aspects of the four principles of the agile manifesto listed below that state that agile practitioners value the points on the left more that the points on the right of "***over***" while they realise the value in undertaking the activities on the right of "***over***":

a) Individuals and interactions ***over*** processes and tools

b) Working software ***over*** comprehensive documentation

c) Customer collaboration ***over*** contract negotiation

d) Responding to change ***over*** following a plan.

Table 1 is a tabulation of a sample of studies that have been conducted since 1988 to understand software development practices in a variety of contexts. The development practices sections of this tabulation are illustrations of the extent to which the practices show application of the principles mentioned above.

	Past studies		Contemporary studies	
	Curtis *et al*. (1988)	Nørbjerg (1994)	Baskerville & Pries-Heje (2004)	Kautz & Madsen (2003)
Characteristics of the Study	Interview study of personnel in 17 projects	Longitudinal interview study of two projects	Interview study of personnel in 12 companies	Interview study of personnel in four companies
Technology and Information Systems Context and conditions	Large projects, diversity in application area Thin spread of application domain knowledge Vague and negotiable Requirements Communication bottlenecks and breakdowns	Commercial software product; In-house project Division into departments, jobs, tasks and phases Time pressure Efficient use of programmer Resources	Varying project size, diversity in application area Great diversity in types of organizations, projects and teams Time pressure Vague and negotiable requirements A new type of software market	Varying project size, Web sites and systems Great diversity in types of organizations, projects and teams Different types of internet development
Development practices	Exceptional people Documentation not enough, constant verbal communication required Learning via exploration, simulation and prototyping	Knowledgeable developers Release-oriented development Negotiable quality Fixed architecture Documentation not enough, verbal communication required	An ideal work force Verbal interaction and colocation with customers Parallel prototyping Fixed architecture and parallel work and parallel work	Iterative prototyping Identification of overall architecture Verbal communication and documentation

Table 1: Overview of past and contemporary practices from Kautz, Madsen, & Nørbjerg (2008a:232)

Despite the contention and debate around the factors causing the emergence of agility there have been attempts to explain the practice of agility coherently. Cockburn (2002a), contributes theory to give credence to the agile manifesto principles. The motivation for Cockburn's work came from his disillusion with proclamations that successful software delivery was underpinned by rigorous methodology and modelling practices. Similar to the world of general project management, the software development community has institutions that prescribe and promote best practices and certification. In the software development community institutions like the Object Management Group (OMG®) market the unified process and the unified modelling language (UML®) as an approach to underpin the delivery

of software. The OMG has for many years claimed that software delivery will be enhanced by rigid adherence to a UML model-driven, iterative approach. The ideological debate remains despite the wider acceptance and use of agile methods (Fraser, Rising, Ambler, Cockburn, Ekstein, Hussman, Miller, Striebeck, & Thomas, 2006).

Cockburn presents two ideas to put forward justification to legitimise engaging in agile principles to deliver software solutions. Firstly, Cockburn introduces the idea of a parsing pattern to show how human beings all attach different significance to messages or stimuli that they receive. The second idea presented by Cockburn is the principle of transcendence, which defines how practitioners transcend to fluency or unconscious competence in any practice. Cockburn's analogies are specifically oriented to software development and his motivation was to dispel the assertions that method equals understanding and formal languages like the UML improves communication and ability to specify requirements (Cockburn, 2002a).

Cockburn (2002a; Sewchurran, 2008) introduced a parsing pattern as the concept to present reasons for the varying significances that human beings attach to similar events. Cockburn refers to "parsing an experience" as the process by which human beings internally process and store all incoming information. According to Cockburn, human beings dissect life experiences into separate, meaningful parts that are then stored in memory for later retrieval. In order to do this, the brain uses parsing patterns that can be seen as a sort of filter that adds significance to pieces of stimuli. Although there are other more theoretically rigorous explanations that deny the claim of mind body separation, the parsing pattern concept appears to be accessible for undergraduate students and the practitioner community (Sewchurran, 2008). More rigorous explanations of this process are given in chapters 3, 4 and 5.

With the parsing pattern concept Cockburn illustrates that understanding is a self-interpretive process which happens according to a recipient's own structural determination. The phenomenon of communication therefore does not depend on what is transmitted, but instead on who receives it. Similarly, through such mechanisms, the worldly experiences of human beings are also constrained by the limitations in their parsing patterns. Being prejudiced toward an experience increases the chances of missing parts of the experience that are not part of the parsing pattern. For example, within a project experience, if practitioners expect the PMBOK formulation they will not be open to anything else that may be happening. The concept of parsing patterns also helps convey that communication can never be perfect, because it depends on the parsing patterns of those receiving the communication. People with similar experiences can jump larger gaps, working from mere gestures or implicit understanding. Dissimilar people, on the other hand, will have different parsing patterns and the communication gaps that can be jumped are likely to be smaller. Due to the nature of communication imperfections, backing up to explain simple concepts is often required and there can be no end to this backing up because there will always be someone who will not understand. Those who have had similar experiences are bound to have those elements of influence engrained within their parsing patterns.

Cockburn's (2002a; Sewchurran, 2008) second concept of relevance, transcendence, is that people learning and mastering new skills pass through three stages of behaviour and understanding : following (level 1), detaching (level 2) and fluency (level 3). These can also be broken down into different methodologies used. At level 1, with limited or no knowledge, a practitioner will look at one procedure that works and learn it, e.g., the rational unified process where procedures, techniques and standards are detailed. Here a practitioner merely learns the correct process and applies it, even if it is not understood. At level 2, after

some experience, practitioners start to identify the limitations of a single methodology and realise the influences of power in the project context. At level 2, practitioners have a better understanding of the process and other alternative processes to a task but are still learning. At level 3, practitioners have knowledge and understanding of most techniques, and are able to identify the important processes to complete the task. These person's will make their way to the end because they understand the desired outcome. Cockburn's ideas accord with the Dreyfus (2004) five-stage framework and work by Cicmil *et al.* (2006) discussed below.

2.7.3 Project practice as coping by learning and innovating

The project management definition by PMI given below creates the impression that project managers only engage in rational activities during the management of projects. According to the PMI, project management is

> *The application of knowledge, skills, tools and techniques to project activities to meet project requirements and is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing* (PMI, 2004, p. 8).

Moreover, the definition also gives the impression that to claim engagement in project management, a practitioner has to be engaged in rational thought and action as is prescribed by the PMBOK. Often, project managers need to make decisions under pressure without all the relevant information. Leybourne & Sadler-Smith (2006) claim that project managers use significant levels of intuition and improvisation because of the nature of project circumstances. Improvisation is given as the set of actions which causes deviations to planned actions in order to accelerate the implementation of actions; while intuition is a form of 'gut feel' or 'hunch' which provides unconscious reasoning for acting in a certain manner. Although intuitions are mostly unconscious reactions, they are also habitual

reactions that are actually based on expertise and prior learning that have solidified into habits (Leybourne & Sadler-Smith, 2006, p. 484). These claims by Leybourne & Sadler-Smith indicate the chaotic nature of project activity and management in general.

The literature discussing the stressful nature of project work is further indication that a project not just about controlling and applying best practice. Richmond & Skitmore (2006, p. 6) present a study that shows ICT project managers expect to experience stressors associated with new technology, boundary spanning, role conflict, workload and uncertainty. These researchers restrict their study to only project managers but it could be argued that the stressors they identify also affect project workers on IS projects because the identified factors are experienced by both project managers and project practitioners. Optimism is identified as a characteristic that tends to help project managers cope in these circumstances (Dolfi & Andrews, 2007). The research conducted by Dolfi and Andrews in their study of 858 project managers illustrates that those project managers who had more than five years of experience tend to adopt an optimistic disposition. This strengthens the claim that optimism is a required characteristic of successful project managers.

To explain the innovative nature of project work and the deviation experienced between planned and actual work there is a long tradition of research in the operational research discipline which claims that decision makers face bounded rationality. Sadler-Smith and Leybourne (2006) and Söderholm (2008) discuss the use of improvisation and intuition to explain deviations from rational judgement. Söderholm (2008) points out that best practice prescriptions are devoid of any approaches to deal with unexpected activities such as innovative action, applying detachment strategies, setting up intensive meeting schedules, and negotiating project conditions, despite the coincidence that these interventions are regularly required during project execution. Innovative action is explained by Söderholm

(2008, p. 84) as the ability to deal with unanticipated changes like schedule conflicts and resource reallocation to cater for on-site short term problem solving. Extensive meeting schedules or short term coordination is explained by Söderholm (2008, p. 85) as the ability to closely monitor a problematic sequence of the project to ensure there is continuous understanding, communication and an effort to intensify commitment building to undertake project work. Detachment strategies are explained as the ability to keep parts of the project going by re-directing changes or revisions in such a manner that they are tackled as sub-projects that coincide with the primary project momentum. Negotiation skills are defined by Söderholm (2008, p. 85) as the ability to negotiate resources, scope, schedule, etc. with project stakeholders, steering committees, functional departments and customers to ensure that the project is given the required conditions to allow it to remain feasible and attractive.

Introna (1997) attempted to dispel the myth of managers being in control when planning, monitoring and controlling through management information systems. Cicmil *et al.*(2006) make a more recent attempt, directly related to project management, to dispel the myth that managers are rational, purposeful, knowledgeable professionals who make sense of what is happening, and then design systems of action to ensure outcomes. Cicmil *et al.* (2006) present a five stage competency path that characterises the development of project managers along the stages of novice, advanced beginner, competent performer, proficient performer and expert or virtuoso. The path is derived from the model of adult learning proposed by Dreyfus (2004) where skill acquisition starts out with a novice being unconscious of the level of incompetence, who then transcends to a level of consciousness about incompetence, and then goes on to become consciously competent, to finally becoming unconsciously competent. A qualitative, interpretive study led to the development of this outcome. The study was based on interviews with project practitioners over a long sustained period to enquire about the skills applied in the actual management of projects. A

key issue raised by Cicmil & Hodgson (2006), and later by Walker, Anbari, Bredillet, Söderlund, Cicmil, & Thomas (2008a) and Walker, Cicmil, Thomas, Anbari, & Bredillet (2008b), is that the initial discourse can prevent transcendence to higher levels of competence because best practices such as PMBOK make up a small part of the overall experience of working on projects.

In the presentation of the competency framework Cicmil *et al.* (2006) quote Stacy (2003, p. 393) to characterise the project management process as an activity characterised by

> *…courage to carry on creatively despite not knowing and not being in control, with all the anxiety that this brings.*

Cicmil & Hodgson (2006) also quote Flyvbjerg (2001) to illustrate that the manager is a *"virtuoso social political actor"* whose virtues include reflexivity, ethics, value rationality, and the use of judgment and intuition in context. A strong theme that emerges from Cicmil and Hodgson's work is that project management is dependent on reflexive learning, moral thought, practical wisdom and a prudent response to dynamic situations that continually change. A similar view was advocated by Drucker (1993, 2004). Project management therefore requires a blend of instrumental rationality, intuition, and *"the feel for the game"* in a context whilst *being-in-the-world*. *Being-in-the world* is explained in chapter 4. A strong theme developed by Cicmil and Hodgson (2006) building on the ideas of Flyvberg (2001) and Stacey (2003) is that an alternative perspective is needed to consider the practice of project management as social conduct, defined by history, context, individual values and wider structural frameworks.

The *"stages of adult learning view"* of project management practice proposed by Cicmil (2006) is discussed in the next section. This contribution has been very significant for the

project management community and has assisted in explaining a number of the problems the research community has been grappling with. The most significant issue the framework assists with is to make the problems that result from a narrow ontological focus more evident and tangible. The framework has also clarified the role best practices serve and the nature of skilled practice. Thus far, there is record of the following contributions being inspired by Cicmil's work: Sewchurran (2008) and Walker *et al.* (2008a,b). The framework is explained in great detail in the next section and then again in Chapter 5, because knowledge of the framework is crucial for the remainder of the thesis.

2.7.4 The stages of adult learning view of project management practice

At the *novice* stage of development the Project Manager (practitioner) can be viewed as someone who has graduated with some form of certification or has been exposed to the PMBOK or PRINCE2. The *novice* practitioner's behaviour is usually governed by rules related to processes and tools. The basis of action for problem-solving or for handling problem situations is rote application of the tools and techniques provided in the training. The probable explanation for this rule-based behaviour is limited work experience and the novelty of the given problem situation to the novice. In addition, the novice has genuine belief that instrumental application of the project process and the incorporation of relevant knowledge areas will correlate with successful results. Cicmil *et al.* (2006) claim that these tools form an integral foundation, allowing for gaining initial experiences in Project Management. Cicmil *et al.* (2006) also claim that this foundational knowledge can hinder subsequent acquisition of skills at higher levels; a complementary description is offered in chapter 5. Flyvbjerg (2001) makes a similar observation in his assertion that the PMBOK prescription for project practice lacks reasoning of an underlying theory; hence it does not allow for the development of wisdom to use the techniques to deal with real-life problems in concrete cases (S. Dreyfus & Dreyfus, 1980; S. Dreyfus, 2004; Cicmil *et al.*, 2006).

A *novice* develops into an *advanced beginner* as real life experiences are acquired by working in groups. At the *novice* stage the different aspects of the project are treated separately and given equal importance. Cicmil *et al.* (2006) suggest that at this stage, the project manager is able to recognise relevant elements in different situations through the use of trial and error with the PMBOK guidelines. The *advanced beginner* makes reference to past recurrent experiences and situational aspects learned through experimentation based on the application of different combinations of tools and techniques. These project managers become aware of their incompetence by identifying their shortcomings in past projects or through feedback and subsequently start to apply these techniques with more discretion (Cicmil *et al.*, 2006).

An *advanced beginner* then progresses to a *competent performer* by standardising practice and developing a routine of procedures through exposure to more projects. At this level, identifying relevant information, disseminating it and prioritising experiences accordingly is core practice. The project manager can now formulate the appropriate deliberate plans and goals for the project. Other important attributes are the “ability to think on one’s feet, confidence, reflection, choice of action and risk taking” (Cicmil *et al.*, 2006; page 680). Cicmil *et al.* (2006) state that a competent performer takes deliberate steps to involve thier environment and build a relationship with it. From this stage onwards, more reliance is placed on experience rather than on formal principles (Cicmil *et al.*, 2006).

A *competent performer* becomes a *proficient performer* by developing intuitive understanding of both the present and future aspects of a project and is able to organise better. Cicmil *et al.* (2006) argue that the proficient performer’s mind set shifts from being cognitive, analytical and rational to being intuitive, holistic and relational. At the proficient

performer stage the project manager becomes aware that decision making requires interpretation and judgment and subsequently takes an active role in seeking to develop these skills based on prior experiences. This is achieved by engaging in reflective understanding and participating in power relationships. As such project managers evaluate their own past experiences, they become increasingly conscious of their own competence (Cicmil *et al.*, 2006).

The *expert (Virtuoso)* stage is currently the highest level of competence a project manager can attain according to Cicmil *et al.* (2006). Project managers at this level of competence exhibit superior, expert and effortless performance. An expert project manager synchronises thought, body and knowledge. At this stage there is an embedded quality; the expert is unaware of this competence as the basis of decision making. Behaviour is the intuitive grasp they have over the situations they are presented with. In essence, all the knowledge, attainments and experiences at each level of PM competency is an ingrained part of such project managers and becomes the basis of their intuition. Therefore, the expert's action is regarded as intuitive but reasoned (Cicmil *et al.*, 2006). Chapter 5 gives a phenomenology of this process.

2.7.5 Project practice management depends on leadership

The role of leadership has been highlighted and emphasised in the project management literature. The realisation that leadership plays a significant role has not been sufficiently developed into useful and practical theories to allow leadership to be learnt, practiced and developed as a competence. An insightful description of the mechanics of leadership is given by Maccoby (2004) who explains that transference is the emotional glue that binds followers to the leader. Through positive transference, followers give the leader the benefit of the doubt and take on greater risk than they would otherwise do. Leadership is further

described as either transformational or transactional (Keegan & Hartog, 2004). Keegan and Hartog (2004) proclaim that the nature of projects calls for the character of transformational leadership, instead of transactional leadership which they identify with operational or line management. According to Keegan and Hartog (2004) transformational leadership gets project participants to identify personally with the project leader and the vision that is articulated. Such a form of project organisational identity is established through intellectual stimulation and the charisma of the transformational leader. Transactional leadership on the other hand is a relationship that is established between leader and follower which is based on the exchange of valued outcomes; for example, specific tasks, roles, wages, prestige, forms of security, etc. Transformational leadership is described as leadership which gets project participants stimulated enough to become imbued with the significance of the roles they perform and its subsequent effects on the vision. In a sense the project team becomes committed to the vision articulated to rethink old ways of doing things and be open to new experiences. This form of commitment is much stronger than the type of commitment established through transactional leadership, and often gets teams to perform beyond expectations.

Hamel (2006) makes a similar call for greater transformational leadership to deal with the innovation challenges organisations face in the new millennium. Hamel (2006) claims that 21st century society is immersed in a commoditised era, an era which he describes as having abundant choices from which the consumer has the option of choosing. Thus there are heightened levels of competition which require faster responses to counteract competition. This era is therefore characterised by shorter product cycles and the need for constant innovation to capture and retain market share. The typical problems in the modern era therefore demand fortitude, imagination and perseverance. According to Hamel (2006) these personal attributes are easiest to stimulate when the problem is both important and

inspiring. Hence the problem needs to be consequential and soul-stirring. Hamel (2006) discusses the need for a type of transformational leadership that is able to embrace the human spirit to create conditions necessary for performance levels that are adequate to solve the typical problems organisations face in the commoditised era.

Software development practices in the early 1990s used to be prescriptive, normative and dominated by best practice ideologies. Much of the managerial research on ERP implementation has been found to be prescriptive or normative focusing on what would be considered best practice for successful implementation of ERP systems (Davenport, 1998; Besson & Rowe, 2001 cited in Osei-Bryson *et al.*, 2008). The concern with ERP managerial research is in accordance with the problems reported in the project management literature. Instead of a detached management approach, based on monitoring and control, a leadership approach seems to be required on IS projects. This is reflected in the findings of Osei-Bryson, Dong, & Ngwenyama (2008, p. 518), and others (Baskerville *et al.*, 2008; Kautz *et al.*, 2008a, 2008b). Osei-Bryson *et al.* (2008) infer that implementation effectiveness depends on a management role that is based on communicating a vision for the users and project team to embrace and strive toward. This management role is closer to the leadership role discussed above. The suggestion by Osei-Bryson *et al.* (2008) implies that the final solution is an emergent outcome determined by the users as they acquire more understanding of how the project implementation relates wider organisational goals and the roles that they can play. Again, this finding is congruent with several other findings discussed in this chapter such as the need for learning, embracing a benefits realisation approach, etc. While it is not the intention to seek universal theories at this point, it has to be acknowledged that findings appear to be tending in the same direction. A synthesis of the findings is given in the next section as part of the conclusion.

2.8 Summary and Conclusion

This chapter has focussed on acquiring a coherent understanding of the literature relevant to improving IS project management. While completeness is hard to judge in such an effort, there are similarities in the conclusions reached in this chapter and two major conference events dedicated to project management: IRNOP and PMI. This is one indication that the sources have been representative of the debates relevant to IS project practice. A synthesis is given below identifying the main strands that are emerging.

There are suggestions that the natural belief and acceptance that society feels for project management practice has become etched into society's value system as it evolved (Whitty & Schultz, 2007). While this does not totally absolve PMI of the agency effect in driving the adoption of best practice approaches to project management, it does offer an alternative rationale to explain wider acceptance of project management despite the lack of substantial benefits accruing as a result of the use of best practices. More importantly, the findings illustrate that conditions are rife for the acceptance of practices that portray instrumental approaches. Thus even if PMBOK were replaced there are cultural elements in society that yield to, and are attracted to, practices that promote the ideologies of best practice and standardisation. Whitty and Schultz (2007) suggest that the cultural structure is as a result of the ideologies that have become etched into society's value system as society evolved through the ages of *Newtonianism*, *Liberalism* and *Taylorism*. Similarly, Townley (2002) observes that the structures of reason generally employed in management in the early 21st century remain influenced by epistemological assumptions from modernity which have been the residue of 19th century management and Cartesianism. Townley lists five characteristics of modernity which continue to constrain and preserve the management discourse: rationality, causality, agency, certainty and sovereign power (Foucoult (1970), Toulmin (1990), Bloor (1991) cited in Townley, 2002, p. 556).

Rationality is supposed to define the ideology of giving an account or measure, without considering contextual circumstances or substantive issues. This manner of reasoning has caused project practice knowledge creation to be motivated by the ideals of transcending contingent and contextual influences to define universal formal principles, such as those espoused in PMBOK. The causality influence shows itself in the manner through which principles for monitoring, controlling or motivating are defined. There is an implicit assumption that nothing is happening or will happen until a superior agency exerts influence through reward systems or punishment systems. The certainty assumption is the ideology that with further empirical research all knowledge will be made explicit and humanity will have more control over its destiny. The sovereign power ideology relates to the belief that the absolute truth is known by someone and to judge appropriateness a comparison to the absolute truth must be made (Townley, 2002). The review undertaken has discussed how PMBOK epitomises these characteristics of modernity. These five characteristics together remain as the structures that influence management and project management practice and are unlikely to be eroded in the near future.

Despite these modernity effects there are alterative views emerging. The view that projects are a social phenomenon has gained momentum. As evidence the review covered several requests that call for engagement in alternative research methods. A desired result is to conceptualise the project process, project manager's role, project participant's roles or project sponsor roles from various other perspectives. The traditional instrumental definition of a project is also given a relative definition to the emerging conception that projects are social phenomena. Soderhölm (2008) sees this as a perspective that can be used to inspire the rational intentions of project participants, enabling them to point to future action as a series of inter-related steps that are constrained by time, scope, cost and quality to cause a certain organising pattern. And similarly, other researchers have used other analogies like

the complex responsive processes of relating (Cooke-Davies *et al.*, 2007), the temporary organisation (Packendorff, 1995; Bredillet, 2008; Söderholm, 2008), and a resource constrained game of innovation and communication (Cockburn, 2002a). These efforts intend to construe or depict organising in a certain way and give rise to a phenomenal domain that takes root in these analogies to allow understanding of experiences in a particular way.

Based on the literature reviewed it can be inferred that the traditional motive of project organising is being surpassed by a view concerned with value management and benefits realisation instead of being primarily inspired by the constraints of scope, time and cost. The nature of project organising no longer assumes that individuals always behave in a normative, rational and reflective manner. The alternative frames that have emerged attempt to characterise organisation and guide the expression of experiences in these settings as an emergent process. A recent analogy is the complex responsive processes of relating. From this perspective agents are assumed to be enacting practices of wider organisational and institutional structures at various levels of interaction. The stages of adult learning perspective are given as an estimate of the stages of enaction project participants and project managers undergo. The role of leadership was also discussed as a mediating influence on enaction. The temporary organisational analogies discussed seem to be a manner of contextualising the wider influences in specific ways.

There is thus a phenomenal domain emerging to describe the essence of project management. The emerging frame is tending toward a model in which human enaction is the unit of enquiry and is affected by a range of contextual influences. At this stage the discipline is seeking to describe the patterns in this phenomenal domain. Researchers are being encouraged to undertake empirical studies to define a range of concepts to give insight into the as-lived experiences on projects. The process is not guided by an explicit

unifying ontology. But within segments of the research community there are principles emerging that can guide the verification of what kinds of questions are appropriate and what kinds of answers will make sense. This chapter presented efforts that show that a lack of underlying theory is being addressed. The alternatives presented are tending toward a similar direction but are not covered by a coherent framework.

O'Donovan and Roode (2002) argue that an explicit ontological framework can delineate what the essence of a discipline is and give the discipline a unifying cultural structure to which members can ascribe or can challenge. It is evident that a lack of ontology has caused significant concern among IS project management researchers because they do not understand what phenomena the discipline is united to verify, explore and extend. The 8th annual IRNOP conference in 2007 ended with a debate about the statement: "This house believes we no longer need the discipline of project management" (Brady & Söderlund, 2008, p. 465). The conference attendees responded by highlighting that the discipline should exist because there is so much interest about projects in both practice and research. Similarly, the 2008 PMI research conference also ended with the realisation that the discipline is still emerging and lacks the concepts that represent the essence of practice (Dvir, 2008, p. 10). An underlying theory therefore appears to be a crucial next step in the evolution of the discipline.

This chapter started with the profound statement by Reich *et al.* (Reich *et al.*, 2008, p. 266) depicting successful IS managers as those who learn how to bravely step away from traditional "thou-shalt" forms of project practices. This statement set the tone for the chapter. A response to this comment was staged over five sections. Firstly, there was a discussion on the emergence of the best practice core of IS project management. An account of what IS project management practice has come to mean to practitioners and other stakeholders followed. The third section gave alternative approaches to researching IS projects, followed

by the next section which tabled alternative views of the project manager and project practice. And, finally the conclusion presented a synthesis of the research literature in this section.

The review confirmed the emerging view of project practice as a social process instead of an instrumental process or life cycle model. The prime focus of project practice appears to be value creation. And practitioners engaging in project practice are not rational technicians but are reflective practitioners engaging in complex, inter-relational processes mostly concerned with learning, innovating and coping. As yet, there is no explicit formulation of underlying theory but progress has been made.

The next chapter discusses the research processe and epistemological assumptions.

Chapter 3 Research Method and Epistemological Assumptions

3.1 Introduction

Traditionally, there have been two categories of knowledge: *a priori* and *a posteriori*. *A posteriori* knowledge is grounded in sensory experience, while *a priori* knowledge is grounded in intellectual or rational intuitions. In qualitative interpretive research it is accepted that there are no thoughts that are free from preconception (Walsham, 1993). Hence, all experiences are negotiated by prior understanding. When there are doubts about the adequacy of ontology, like there is in the area of Information Systems project management research, an empirical or *a posteriori* approach can be problematic. Problems can arise because there are not necessarily enough or suitable concepts to describe the phenomenal domain that should be of interest to information systems project management researchers and practitioners. Research that investigates or argues for new ontological direction, such as this thesis, therefore stands to benefit more from *a priori* approaches.

The purpose of this chapter is to provide the reader with background information to clarify the research process, the assumptions the researcher has made about cognition and how the outcomes will be utilised to contribute to furthering research and practice. Generally, such a discussion is considered to relate to an account of the epistemology, which is understood to define what counts as legitimate knowledge and how the researcher claims to know what he or she claims to know and how the broader community of IS project practitioners will benefit from the knowledge claims that arise (Landesman, 1997; Maanen, Sorenson, & Mitchell, 2007; Monod & Boland, 2007). Because the research method adopted in this thesis is not a typical approach, the reader cannot be expected to draw on conventions of a well understood approach such as grounded theory, positivism, etc. Hence, considerably more effort is plied to render the epistemological assumptions explicit.

This chapter begins by highlighting the problems caused by the lingering effects of positivism. This thesis assumes that cognition is an embodied process thus a discussion of embodied cognition is provided. A discussion of the knowledge generation process follows which highlights the process by which the research product will be attained and the researcher's relationship to the research product. The chapter ends with a review of the activities undertaken to pursue a critical agenda.

3.2 The Lingering Effects Positivism has on Knowledge Creation

Positivism does not demand that the researcher make strong assertions about the epistemology or ontology of the research. Consequently, the researcher does not have to understand the essence of the phenomenon being studied nor the validity of the knowledge claims in terms of the potential impact the findings have on the subjects being studied or for broader society. Capra (1982) estimates that the principles of positivist research practices were established during the scientific revolution which extended from the 15th to the 17th century. During this period the emphasis in knowledge creation was placed on rendering all substances explicable through the scientific method. Prior to the scientific era there was respect for the natural order, and research questions were formulated in accordance with this and therefore directed at the underlying purpose of natural phenomena. During the scientific revolution, however, the emphasis shifted towards control. This was due to the influences that resulted from the emergence and refinement of the positivist ideology. According to Capra (1982) the two key influences that shaped positivism were: Galileo's mathematical description of nature and Descartes' analytical method. Thus, scientific claims have come to privilege measurable properties, and only recognise essential properties of material bodies, shapes and movement which can be measured and quantified. All other

properties such as smell colour, taste, feelings, motives and ethics were classified as subjective and scientists using positivist methods excluded these person dependent properties from scientific discourse. As a result, these subjective properties were regarded less and less until they were not considered important to the paradigm of knowledge creation. As a result of this implicit assumption, research has become ensconced in "tabula rasa" or clean-slate assumptions implying that research can be a disembodied practice. In accordance with this assumption, research relevance is often judged by the extent to which knowledge represents disembodied and universal truths.

Over the centuries positivist ideologies have come to influence understanding more widely. An important assertion inherited from positivism is that within the knowledge creation paradigm, cognition is seen as a separate process because of the espoused assumptions that human nature is primarily rational, reflective and disengaged. In this frame the nervous system is understood to gather information from the environment, allowing human beings to build a representation of the world that is subsequently used by the brain to compute behaviour deemed adequate for survival. The ability to compute adequate behaviour comes from having the correct knowledge to guide understanding and consequential action. A popular manner of describing this process is the information processing model which infers that cognition's role is to recover and observe pre-given properties of the world. Through these assumptions knowledge has acquired the properties of being objective, static and being either right or wrong; and without explicit knowledge it is assumed that there is chaos. Positivism's underpinning motive is that with increased knowledge production total mastery of nature is possible by human beings through prediction, control and domination (Maturana & Varela, 1980; Capra, 1982; Varela, Thompson, & Rosch, 1993; Maturana & Varela, 1998).

3.3 The Embodied Researcher

The alternative to positivism is to believe that every interpretation is shaped and regulated by a set of assumptions and expectations about the meaning of the whole, which is sketched out beforehand in understanding. In this frame, even when a researcher is engaging in precise textual interpretation, and is appealing only to what is presented in the text, it is impossible to be uninfluenced by prior knowledge. And the researcher has to accept that interpretation is being influenced by the un-discussed assumption of the person who does the interpreting. There are thus no bare facts, no things themselves that can be encountered independent of the presuppositions outlined by the understanding (Guignon, 1983, p. 73). The researcher is in essence an observer and is normally engaged in promoting, exploring or describing a regional phenomenal domain that stands out from the background. Heidegger's concept of background is discussed further in section 4.3 of chapter 4. For example, the researcher's role in this thesis is to define a phenomenal domain that describes the essence of information systems project practice. Instead of a pre-given, perceiver-independent world, this thesis subscribes to the assumptions promoted by embodied approaches which are concerned with understanding how action is perceptually guided in a perceiver-dependent world.

3.4 Cognition as an Embodied Process

Maturana and Varela (1980; Maturana & Varela, 1998) present a perspective on embodied cognition that has specific relevance to this thesis and can deepen the concepts presented by Heidegger and Bourdieu which are discussed extensively in chapter 4. According to Maturana and Varela, human beings are multi-cellular organisms and can thus be described as a colony of autopoietic systems. Autopoietic systems are self producing and are organised in such a way that they produce the very components that are required for the

continuance of their processes. A cryptic phrase coined by Maturana and Varela to emphasise that cognition is not a separate process but is instead inherently tied to existence is given as: *"All doing is knowing and all knowing is doing*" (Maturana & Varela, 1998, p. 27) .

This statement is in accordance with Heidegger's view that beings are already involved in a familiar world, undertaking practices they are knowledgeable about, and know how such practices contribute to the stand being taken on their *being*. Section 4.2 in Chapter 4 will show that very little prepares us to unpack existence. Similarly very little prepares us to make sense of the statement by Maturana and Varela, probably because of the number of years we have accepted the positivist assumptions, to a certain extent unwittingly (Maturana & Varela, 1980; Varela *et al.*, 1993; Maturana & Varela, 1998).

The view that cognition is an ongoing process subservient to existence rivals the common view that the environment is given through the retina, and this image is then processed by the mind during a cognitive process to compute understanding of the phenomena, together with adequate behaviour for the given situation. Maturana & Varela (1998, p. 162) explain that in the area of the retina, to which the visual image is transferred, there are hundreds of neurons from other zones of the nervous system. The retina therefore should not be understood as a relay station that transfers visual images as retinal stimulation to the visual cortex. Instead, the transfer to the visual cortex needs to be understood as a confluence of the visual stimulation and other stimulation coming continuously from the rest of the body (Maturana & Varela, 1998, p. 163).

Maturana and Varela (Maturana, 1978; Maturana & Varela, 1980, 1998) claim that the nervous system is the means by which human beings learn and store knowledge of their interactions with the environment. The human nervous system is said to interconnect the

sensory and motor surfaces via the brain, providing a dynamic system of coordination between sensory and motor surfaces that is ongoing and tied to the existence. Further, according to Merleau-Ponty (cited in (Varela *et al.*, 1993, pp. 73-74)), the human being as an organism is tied to its environment in a dialectic manner such that the recurrent interactions are stored by the nervous systems as sensory-motor coupling of particular phenomena.

Related phenomena in a particular domain can be called a *unity*. In addition a *unity* is said to be brought about by an act of distinction; either promoted by a researcher or by a human being during moments of reflection. The *unity* can also be considered to be a composite entity if it has components that are relationally linked which determine its properties as a specific class, such as an information systems project manager or construction and engineering project manager. The states of the composite *unity* are determined by its organisation; that is, its component constitution and its structure which are the specific conditions an instance finds itself in at a given moment. The organisation and structure of the *unity* determine the range of states that the being can use to interact with its environment as is delimited by the *unity* (Maturana, 1978, p. 31). Theories or knowledge claims therefore often take the form of state and interrupt trajectories or predictions within a *unity* or phenomenal domain (Maturana & Varela, 1998, p. 32). This explanation accords with, and deepens, Bourdieu's concepts of field and habitus, and Heidegger's concept of background which are explained further in chapter 4 in sections 4.9 and 4.6.1 respectively.

The concepts of Bourdieu and Heidegger also complement the ideas of Maturana & Varela. Take for instance, the concepts of *clearing*, *field* and *unity*. Although chapter 4 will elaborate details on the concepts of clearing (see section 4.6.1) and field (see section 4.9), some discussion is necessary at this point to create a context to explain language and consciousness which are important concepts that contribute significantly to the overall

understanding of embodied cognition. The *clearing* is the consciousness *Dasein* has of existence amongst others and equipment. In moments of break-down *Dasein* is able to assert situational experiences, to "de-world" objects by delineating the objects from the background. This process is often described as taking a theoretical stance as an observer. This allows *Dasein* to engage with the phenomenal domain that is disclosed in the *clearing*, which can be compared to the concept of *unity* presented by Maturana and Varela because both the *clearing* and *unity* point to a phenomenal domain that contains roles and equipment offering affordances and objects with states and properties. *Dasein's* existence is momentarily defined by the clearing, which can be seen as a confluence of *fields* which have been internalised by *Dasein* and thus offers it the various affordances.

The experience of *Dasein's* consciousness is only accessible through language through the use of concepts, theories, analogies etc. (Maturana & Varela, 1998, pp. 198, 231). Language therefore provides for the definition of various states of consciousness where individual words become tokens for linguistically coordinating actions representing bodily responses that can be triggered by the nervous system. Consequently, linguistic behaviour can be seen as a form of orienting behaviour. Through linguistic means a human being can orient others to the linguistic domain (phenomenal domain) that is relevant to the interaction. Although *Dasein* is *involved-in-the-world* and unable to step back to adopt a theoretical attitude on an ongoing basis, *Dasein* is still able to engage in coherent behaviour represented by interactions that are mostly appropriate and relevant. The nervous system of *Dasein* is therefore able to orientate it to interactions that come from the environment and provide coherent responses to these while *Dasein* is *involved-in-the-world*. Nervous system responses can be behavioural or linguistic or both. Accordingly, language is said to be connotative or symbolic instead of denotative of individual entities (Maturana & Varela, 1980, p. 30). The nervous system produces coherent behaviour through the generation of

sets of neuronal activity that anticipate a pre-given world (Maturana & Varela, 1998, pp. 232,233). Generally, the nervous system of human beings is always already in a specific state which presents a unique context for each human being, making orientation a necessary precursor to have coherent interaction.

Since human beings largely exist in language, the acquisition of a discourse or mastery of a domain of interactions is achieved by expanding the nervous system through learning how to interact with various phenomenal domains. Such evolution then becomes constrained by the anatomical organisation of the *unity* and language available to identify the states relevant for facilitating interaction with the *unity*, or phenomenal domain. Although the nervous system expands the domain of interactions of human beings, the nervous system remains subservient to the functioning of the human being. For this reason Maturana & Varela say the nervous system operates by structural determination, because the environment triggers reactions from the human being, yet the environment cannot specify the reactions (Maturana & Varela, 1998, p. 131).

Consciousness and mind can therefore be seen as constructions that arise from social coupling that human beings are capable of with the self or with other beings. Over periods of time this social coupling results in the historical (ontogenic) drift of human beings as they cumulatively engage in taking a stand on their being, in Heidegger's language; or maintaining self identity and preservation, in the language of Maturana and Varela. The historical drift is experienced as learning and engaging in various phenomenal domains.

On an ongoing basis cognitive structures are created and re-created through recurrent practices with a *unity* or phenomenal domain. These phenomenal practices get stored in the nervous system as neuronal networks or phenomenal responses. Thus throughout an

individual's history experiences become classified within the nervous system, using a system of concepts, analogies and metaphors; these are sometimes referred to as cognitive or phenomenal structures. Through these structures human beings are able to conjure up a range of nervous system responses, which in turn trigger a range of stored bodily responses to mediate the environment (Varela *et al.*, 1993; Llewelyn, 2003; Raelin, 2007).

At the initial stages of learning a practice, the relation between mental intention and bodily action is typically quite underdeveloped. For example, a person may know what to do mentally but may not be able to physically execute intention. As the person practices, the connection between intention and action eventually disappears as they merge into one state as the nervous system develops. This state of en-action can be described as neither mental nor physical but a specific kind of mind-body *unity* (Varela, Thompson & Rosch, 1993:19). This is a primary reason why Maturana & Varela (1980) claim there is no difference between doing and knowing and knowing and doing. One way of describing this capability human beings have is say that the embodied mind anticipates an already known world.

This view of cognition is embraced by the researcher and therefore has implications for what the researcher can expect from his role in the research process, as well as how the knowledge claims that arise from this thesis are likely to be used by practitioners and researchers. The role of the researcher in this study is clarified next.

3.5 Researcher is an Observer

For an observer the organisation and structure of a *unity* give rise to a set of states and a domain of possible interruptions. Often, the observer imagines that these follow specific trajectories based on specific interruptions. In practice, however, the being's individual history (*ontogeny*) influences the specific state trajectories that accompany interrupts. The

activity within the nervous system is not known and the responses from the nervous system cannot be predicted with certainty because the nervous system mediates sensory effects from the environment with *effector* responses in the motor neurons. The mediation is subject to the states the nervous system finds itself in at the moment of the sensory effect, and the pattern of responses triggered by the individual neurons. As beings learn, their nervous system expands to increase the range of states with which they can mediate their environment. The range of responses an organism is capable of becomes embodied as particular patterns of nervous activity. Embodiment or expanding the nervous system results from recurrent sensory-motor activity and takes the form of a closed neuronal network. Defining input in such a network is near impossible because every one of the states can be an input and modify the network. Due to this architecture the nervous system is a closed system. Patterns of nervous activity are described as cognitive structures and accommodate a pre-given world as various phenomenal domains. The particular structure of sensory-effector correlations is a result of the history of structural coupling (Maturana & Varela, 1980; Mingers, 1991, p. 39; Varela *et al.*, 1993).

Due to the effects of positivism, very often in empirical studies it seems to the observer that the human being is reacting to stimulations coming from the environment. The observer is therefore influenced by a representational world, and can easily fall into the trap of thinking that those being observed are recalling representations of the environment in their memory to determine how to act in an optimal manner. More significantly, the researcher as observer is a living system; hence any understanding of cognition must account for the researcher as an observer (Maturana & Varela, 1980, p. 48). Additionally, the observer interacts with representations in a recursive manner and is thus able to generate relationships with other independent phenomenal domains (*unities*) that come from the researcher's historical embodiment. The researcher therefore interacts with descriptions

recursively which change his frame of reference within the relative constraints of the researcher's self determination. Figure 3 gives a schematic of the relationship between the embodied researcher and the phenomenal domain that will be proposed to represent the regional ontology. The shared biological, social and cultural beliefs and practices that affect project practitioners are also influences for the researcher.

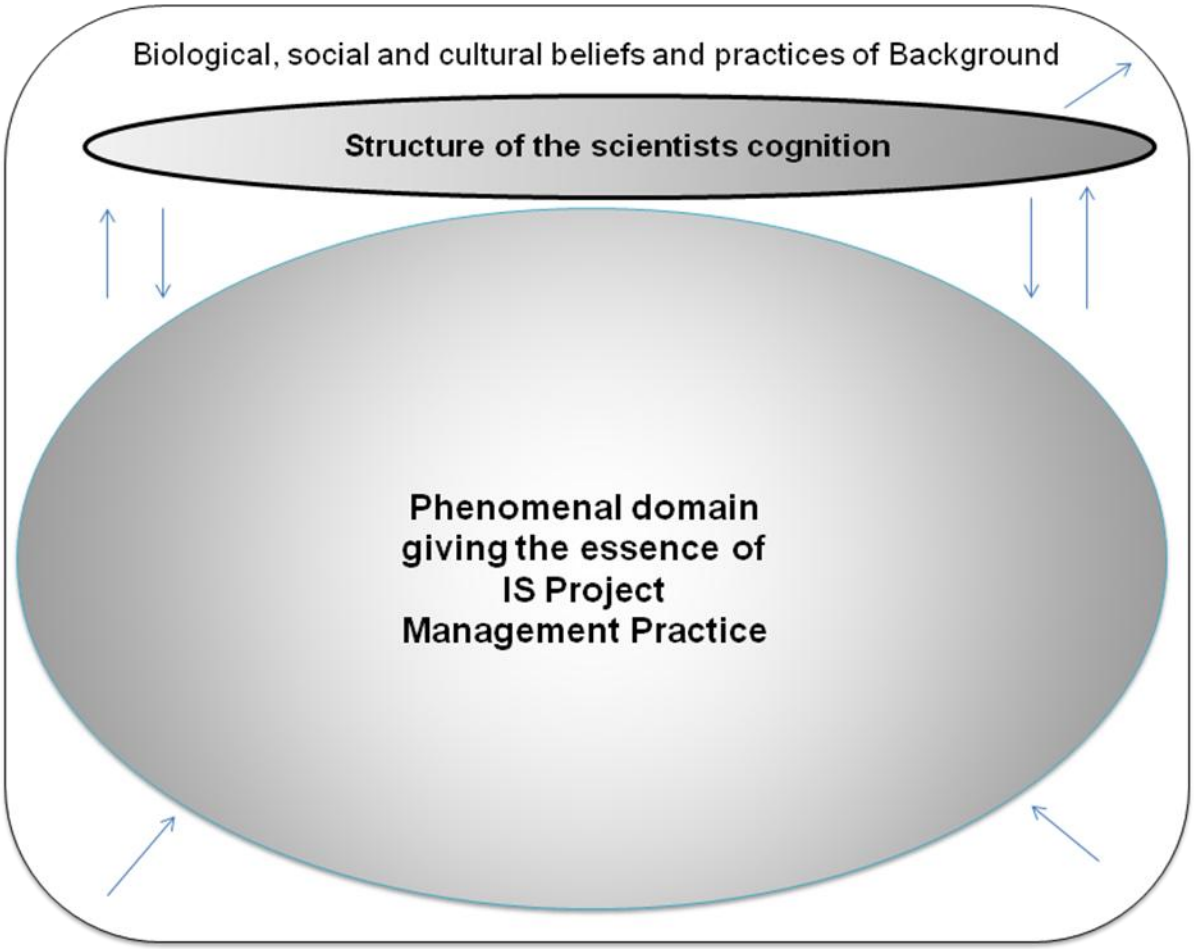

Figure 3: Theorising activity of a supposedly embodied researcher adapted from Varela, Thompson, & Rosch (1993, p. 11)

Thus, there is a need for the researcher to accept that he or she has to articulate how this work is relevant to the stand being taken on his or her being and the limitations the

theorising activity inherently has due to *being-in-the-world,* immersed in a background influence comprising biological, cultural, and social practices. Additionally, the observer cannot see the nervous system and neither can there be an expectation that those being observed are interacting in a reflective, optimal manner. Any research finding for these reasons is an approximation and subject to the observer's structural determination. The next section gives a description of the research process that reflects these assumptions.

3.6 An Approximate of the Research Process

Becker & Niehaves (2007) offer a framework to structure and discuss epistemological assumptions. This framework will be used to outline the assumptions related to the research process undertaken by the researcher and the future implications any emerging findings may have. The content, however, will be formulated from the perspective of the embodied researcher, because Becker & Niehaves (2007) give the impression that cognition is a separate activity that is invoked in particular ways by the researcher instead of an ongoing process that is subservient to existence. The framework given by Becker & Niehaves (2007) provides alternatives to a range of questions that relate to how the researcher comprehends knowledge about what is perceived to exist. The outline of the research process is given below as responses to these questions but provided from an embodied researcher perspective.

The first question of the framework relates to **what the object of cognition is.** This thesis is going to propose a phenomenal domain (*unity*) that gives the essence of information systems project practice in the next chapter. This phenomenal domain will not exist independently from the researcher; instead the phenomenal domain will be defined as a *unity* which is delineated from the background. Through the process of defining and promoting the phenomenal domain the researcher will become structurally coupled to the

regional ontology. This will permit the remainder of this research thesis because the researcher will be in a position to envisage practice within the phenomenal domain promoted by the regional ontology.

The second question given by the framework is: **What is the relationship between cognition and the object of cognition?** As a *unity* the researcher will become conscious of the states afforded by the regional ontology; and in this way will be able to recursively consider the implications of these states within the space of information systems project practice and will thus be able to bring forth a world to consider the research literature to explain, analyse and interpret the validity of the regional ontology. In addition, the seminal contributions that have emerged in the recent literature will also be interpreted with the regional ontology to explore and explain relationship..

The third question relates to **what can be regarded as true cognition.** Becker & Niehaves (2007) appear to be referring to how the proposed regional ontology and corresponding findings can be deliberated about by the wider community of IS project practitioners. The framework presents three options that may apply. These are: correspondence theory of truth which implies truth as a result of comparing statements and facts to yield either true or false; consensus theory of truth which offers statements of truth that are arrived at by members of groups when consensus is reached linguistically; semantic theory of truth which determines truth through reasoning about statements using a meta language. Again, staying consistent with the embodied researcher perspective that is adopted, the phenomenal domain can be used in an optimal way by a researcher only if the researcher achieves structural coupling. That is, the researcher's nervous system is developed to appreciate the various concepts and he or she can connote existence as this *unity,* thus allowing conscious deliberation of the state trajectories of the *unity* and the affordances these present. On the

other hand, researchers entrenched in a positivist frame will find it difficult to see the relevance of this research. The researcher is also using a semantic theory of truth in providing justification for the claims being made by using the theory of living systems by Maturana and Varela (1980; Maturana & Varela, 1998).

The fourth question is concerned with **where cognition originates,** while the fifth question given by the framework is: **By what means can cognition be achieved?** The framework does not see cognition as an embedded process that is perceptually guided by phenomena embodied in the nervous system and the researcher feels there are better explanations that can be provided in a manner consistent with embodied cognition assumptions. Hence, these questions are explored in the next section by referring to the work of Llewellen (2003). Llewellen contributes to these questions by proposing taxonomy of the different forms of theories that are likely and seem to exist. This taxonomy will show how the phenomenal domain can be interpreted as a constitution of 5 interdependent theoretical constructs which have the potential to influence the possibilities of future learning and understanding.

Before exploring the options Llewellen (2003) proposes the problems with the approach of Becker & Niehaves (2007) with regards to questions four and five will be substantiated for completeness. A primary problem with the suggestions provided by Becker & Niehaves (2007) with regard to questions four and five of the framework is that they give contemporary research definitions to describe the process of research instead of presenting an answer to explain how learning or development as a cognitive process can be facilitated through research. For example, the framework by Becker & Niehaves (2007) provides three possibilities for describing the source of cognition: *Empiricism*, *Rationalism*, and *Kantianism*. *Empiricism* is defined as cognition that originates through the senses which results in the opportunity to make knowledge claims that are experience based; *Rationalism* describes

knowledge claims that arise out of intellectual reasoning while the *Kantianism* view proposes that experiences and intellectual thought are sources of cognition (Becker & Niehaves, 2007, p. 202), because the independent things that persist through time remain a fundamental building block of reality as we experience the things, categorise them and cast them into different roles using our minds (Blattner, 1993).

To support the framing of the fifth question (**By what means can cognition be achieved?)** the framework by Becker and Niehaves (2007) provides the following alternatives: deductive, inductive and hermeneutic. Depending on the investigation being undertaken the research could either be inductive or deductive. In inductive research there is usually a set of propositions or claims that are induced from the empirical observations, and usually result in theoretical claims which can be used in future studies to interrogate a phenomenon to provide further descriptions or understanding. If an existing theoretical phenomenon is being explored using another theoretical lens then the approach being followed is referred to as deductive. (Myers, 2004; Becker & Niehaves, 2007, p. 206). The hermeneutic principle applies to all understanding and is not really an alternative category of research. It is more likely an underlying theory. Although questions four and five of the framework provide options to describe the research process, they are limited in their ability to provide assistance and guidelines on how the knowledge claims can be crafted to facilitate cognition as a process of learning or acquiring ability to interact in various phenomenal domains. The following section takes this point further.

3.7 Structuring Knowledge Claims to Facilitate Utility

This section proposes that the framework by Llewellen (2003) be used to structure the regional ontology. The framework by Llewellen gives insight into how knowledge claims can generally be ordered, crafted and positioned to maximise utility. The utility of concepts or

theories needs to be evaluated to the extent to which they enable or disable future understanding. The regional ontology will constitute a phenomenal domain which will comprise of concepts and theories that human beings can use to bring forth a world to understand, observe, act, or with which to talk and interact. The regional ontology has to be carefully crafted to ensure that it permits fundamental explanations whilst also permitting the integration and emergence of diverse theories and concepts. The regional ontology can thus enable and disable future interpretations of phenomena and its architecture therefore needs to be carefully considered.

A significant inference that Llewellen's (2003) contribution allows for is the ability to see how all phenomena embedded in the nervous systems can be explained by the 5 levels of theorisation. Moreover, the regional ontology has to provide a framework that allows for the feasible amalgamation of theories and concepts along the 5 levels of theorisation. The ontology thus enables learning while it can also disable learning because at times the assimilation of new concepts will depend on congruence and interdependence of other concepts. Alternatively, learning may need to dislodge conceptual phenomena already embedded in the nervous system (Llewelyn, 2003, pp. 664-668). It can also be inferred from the contribution by Llewelyn that there is a logical architecture and structure to the phenomenal schema of the nervous system. Similarly, Varela, Thompson, & Rosch (1993, pp. 176-178) claim that a basic activity in cognition is categorisation of the categories that appear to come from the structured nature of bodily and social experiences.

This thesis is attempting to provide a regional ontology that can provide a basic structure to which newer and existing concepts can be added to bring forth a world that more appropriately defines information systems project practice. A major set of activities that have to be engaged with in Chapter 5 is to interpret how recent research findings presented in

chapter 2 corroborate with the phenomenal domain that will be presented in chapter 4. The lens provided by Llewelyn (2003) will be useful in this regard. The taxonomy presented by Gregor (2006) is similar to Llewelyn's proposal but is not considered further in this thesis because it appears to be too prescriptive of how theories can be used. The paper by Gregor (2006) gives the following classifications of theory: Analysis, Explanation, Prediction, Explanation and Prediction (EP), Design and Action. These are prejudiced to specific interactions already and impose a structure on a phenomenal domain that seems unnecessary.

Because new theories have the potential to bring new phenomena into being, empirical data can appear differently under different theoretical lenses (Llewelyn, 2003, p. 666). Theories are designed to serve a practical purpose in daily interaction: they serve as a resource base to provide understanding in situations of ambiguity or provide a reference to point out the next set of activities or actions. Theories are therefore drawn upon when people work out what their opinion should be on particular issues or how they should act in uncertain situations or how they should conduct themselves in relations with other people. The taxonomy by Llewelyn (2003) gives five different ways of theorising available to researchers. These are shown in Table 2 below.

Level	Theory	Focus
1	Metaphor theories	As a means to ground experience. Examples of metaphors are: Software development is a game of invention and communication (Cockburn, 2002a).
2	Differentiation theories	Facilitate "cutting the pie" of experience. Examples of differentiation theories are: Maslow's hierarchy of needs.
3	Concept theories	Examples of concept theories are: feminism, xenophobia, etc. These concepts give access to a phenomenal world.
4	Theories which focus on settings	Explaining how contexts for practices are organised. Examples of theorising settings are: Global software development in South Africa
5	Theorising structures	Explaining impersonal, large scale and enduring aspects of social life. Examples are: modernism, post-modernism, etc.

Table 2: Five levels of theorisation given by Llewelyn (2003, p. 667)

3.7.1 Level 1 theorisation: Metaphor

Morgan (1986, cited in (Llewelyn, 2003, p. 668)) argues that a metaphor is a basic structural form of experience by which human beings engage, organise and understand their world. The organisational metaphor is a well known way in which organisational experiences are characterised. We have come to understand organisation as machines, organisms, brains, cultures, political systems, psychic prisons, instruments of domination, etc (Llewelyn, 2003,

p. 668). The metaphor is a basic way in which human beings ground their experiences and continue to evolve them by adding new related concepts that carry aspects of the original metaphor. The grounding metaphor then plays a role in initiating the conceptual framework.

Llewelyn emphasises the manner in which metaphors allow human beings to understand and experience one kind of thing in terms of another by citing Lakoff and Johson (1980, p4). The first example given shows that when academic researchers experience arguments as war, some of the expressions of their experiences are given as follows: “He attacked every weak point in my argument”; “I demolished his argument”; “I’ve never won an argument with him”; “He shot down all my arguments”. An important part of Lakoff and Johson’s (1980, p4) analysis is that the metaphor influences both understanding and also structures experience. To emphasise the point about metaphors Llewellyn (2003) extends the discussion by showing that if argument is fused with debate instead of war, it was experienced as: a give-and-take affair; the exchange of opinions; the realisation that other points of view are necessary and everyone has a right to adopt a point of view. Through the discussion provided by Llewellyn it can be inferred that the power of a metaphor is that it provides foundational grounding in understanding of a phenomenon and any subsequent understanding has to either take cognisance of or negotiate the foundational understanding the metaphor has established. Additionally, it can also be inferred that people employ several metaphors to understand, theorise and experience phenomena (Llewelyn, 2003, p. 669).

3.7.2 Level 2 theorisation: Differentiation

Still ensconced in a world influenced by Cartesian dualism, a seemingly natural way by which human beings have come to understand is to adopt dualisms like in-out, presence-absence, up-down, finite-infinite, mind-body, public-private, objective-subjective, and so on.

Many of the dualisms are rooted in spatial and bodily experience. This is perhaps a basic way in which people cut up the pie of experience. As with metaphoric theorisation, differentiation theorisation can impede and enable new ways of thinking and doing. Differentiation theorisation therefore aims to create meaning and significance by setting up contrasts and categories that order the world (Llewelyn, 2003, pp. 671-672).

3.7.3 Level 3 theorisation: Concept theories

Concepts are described by Llewelyn (2003) as a basic form of theorisation that is used to observe and represent the world. Concepts therefore give rise to practices. The example given by Llewelyn (2003) is that with the introduction of feminism, women were able to see their experiences differently. Feminism as a conceptual innovation then gave rise to organisations which prioritised the ideals of feminism and challenged established norms. Conceptual innovations often replace, challenge or change existing concepts. Level 2 differentiation theories can be used to sharpen conceptual categories. For example, Feminism can be positioned as two ideals: Feminism in developing countries and Feminism in developed countries. Such differentiation of the concepts can draw attention to slightly different realities which call for different sets of actions, which give rise to a phenomenal domain. Concepts then are a basic form of theorisation that are extended and sharpened using level 1 and 2 categories.

3.7.4 Level 4 theorisation: Theorising settings

Theorising settings is defined by Llewelyn (2003) as the strategy of theorisation that defines the contextual influences on specific individual, organisational or social phenomena. The aim of this theorisation is to explain or understand the wider social conditions under which practices are produced. The social settings of practices can exist at a number of levels and

are not based directly on observable phenomena, and are therefore not dependent on empiricism. This implies that non-observable structural, social and institutional phenomena may be included. Theorising settings or context bound theories offer an understanding of the setting for the experience.

3.7.5 Level 5 theorisation: Grand Theorising Structures

According to Llewelyn (2003), grand theorising is done in the world of ideas rather than the world of practice. In grand theories, practice on the ground is always influenced by structural conditions; and these are not necessarily observable through empirical efforts. Grand theorising is concerned with understanding relationships of power.

3.7.6 Implications for this thesis

The framework can be used to reason about the research described in this thesis. The thesis intends to propose a phenomenal domain as a level 4 theory but will use concepts from other levels to offer explanation of project practice in institutional and societal settings. If the regional ontology is deemed to be feasible, concepts already existing to define project practice as existing levels 1, 2 or 3 theories will need revision or replacement.

The world researchers bring forth is not always what is desirable. Take as an example the issues which confront society in the new millennium: global warming, the widening disparities between the “haves” and “have-nots”, the socio-technical divide, etc. The very world researchers bring forth has the potential of bringing with it hardship (Waddock, 2007). Often, for practical reasons, the full impact of the theories researchers create cannot be fully verified and tested. There are many options available to the researcher. One option is to carefully consider the theorising to check coherency, like the researcher has done to a

certain extent in this section. This has also been done implicitly in this thesis but will be a primary focus of the next section and chapters 4 and 5 which follow.

3.8 The Critical Nature of this Thesis

Thomas Kuhn, Frijtof Capra and others have predicted that the Cartesian legacy human beings benefited from for many centuries is not a sustainable paradigm of knowledge creation. The nature of scientific revolutions is, however, affected by a number of issues, and although this realisation has been around for a long while, change is a complex process because at a practical level change means getting others to acquire a new phenomenal domain. It has been argued that the traditional positivist objectivist approach to research has had a constraining influence on progress toward alternative knowledge paradigms. Some researchers even point to the preserving role such research plays in perpetuating the realities human beings face (Capra, 1982; Kuhn, 1996).

This research intends to ground the practice of project management into a wider social system and is not simply about the objects, systems or processes of project management practice but the theories about the phenomenon of information systems project practice. This form of research is commonly referred to as critical social science research. Prior to labelling the research as critical the researcher had as motivation to contribute to the improvement of the human condition; to find alternatives to existing social conditions. Instead of specific practices that subject project practitioners to distorted relations of power, control and self doubt, a more embracing practice is sought that includes the fundamental nature of being human.

According to Howcroft & Trauth (2004), any research effort claiming to be critical research has to firstly be focussed on emancipation of human subjects. Secondly, the research has

to be critical of tradition; that is, to avoid privileging the existence of any concepts in the phenomenal domain. Thirdly, the research has to have *non-perfomative* intent. This implies that issues of existence are as important as contemporary issues, such as efficiency and effectiveness. Fourthly, to avoid the assumptions of technological determinism, socio-economic change must not blindly accept technology as a logical means for further development. Critical research seeks to disrupt rather than reproduce the status quo. The fifth issue is reflexivity and this has been demonstrated in this chapter by pointing out the planned research process, the effects the researcher has on the results, as well as the opportunities to use the knowledge claims in this thesis to improve practice and research. A further reflexive account will be given as part of the conclusion. By definition then this research project can be considered to be critical research (Howcroft & Trauth, 2004).

3.9 Summary and Conclusions

This chapter undertook to uncover and explain the researcher's view of the assumptions that underpin the validity of the knowledge claims that will result from this research project. Significant discussion was devoted to the lingering effects of positivism and the implications these hold for the judgment of the validity of the resulting claims.

A significant part of the chapter focused on explaining cognition as an embodied activity. This provided a context to explain the theorising activity as an embodied process of the researcher. This process has sensitised the researcher to concepts from the "Theory of living systems" and these concepts will deepen the regional ontology that will be proposed in chapter 4. Although there are difficulties in comparing human beings to autopoietic systems, many of the concepts from the "Theory of living systems" relate to human beings because humans are multi-cellular organisms.

The overview of cognition was followed by a discussion of how understanding and learning are facilitated by concepts, analogies and metaphors. Llewellyn's (2003) paper was used to show how understanding and learning are dependent on the manner in which the concepts are crafted, because a phenomenal domain comprises interdependent concepts which coexist as a specific architecture; and unlearning or learning is dependent on foundational concepts that give root to a phenomenal domain. The regional ontology will be presented as the proposed foundational construct or ontology.

The chapter ended with a discussion aimed at clarifying the critical agenda of the researcher. The next chapter explores as-lived practices in daily existence and works toward a regional ontology that better represents IS project management.

Chapter 4 **Toward a Suitable Regional Ontology**

4.1 Introduction

The tacit ideal promoted by cognitive (best practice) approaches is that the world can be divided into contextual regions of discrete elements and tasks. In this frame the role of successful cognition in problem-solving is to respect the elements, properties, and relations within these pre-given regions. This manner of problem-solving works, to some degree, in domains in which it is relatively easy to specify all possible states, such as a game of chess. The rules for chess can be specified into regions such as: possible movements of chess pieces, positions on the chess board, and rules for turns to be taken by chess players and so on. For less confined or well-defined task domains, this approach has been proven to be considerably less productive. Take an example of a robot that is supposed to drive a car within the city. The numbers of discrete elements that need to be considered are endless because driving does not end at some point (as a driver's ability to drive is not defined by a single trip from point A to point B), and also does not always occur under the same conditions. Generally the endless number of discrete elements is not focussed on because they constitute a common background of ever receding levels of detail which is understood as common sense. Driving then depends on continuous use of this common background (common sense) and upon acquired motoring skills. For similar reasons researchers in cognitive science have realised that the simplest of tasks requires a seemingly infinite amount of knowledge which is taken for granted. Such knowledge depends on experience and therefore does not lend itself to being captured, learned and experienced as objects with properties (S. Dreyfus & Dreyfus, 1980, pp. 147-148; Varela *et al.*, 1993).

Human beings exist in the world without pre-given boundaries. The expectation promoted by positivism to capture common sense knowledge which allows for

representation of a pregiven world is therefore an unrealistic ideal. The background cannot be completely eliminated by the discovery of more complicated rules. Heidegger undertook to explain the background as an ahistorical and cross-cultural influence, and demonstrated that knowledge depends on *being-in-the-world* and is inseparable from our bodies, language and social history. Through the Cartesian legacy many researchers have come to value a form of objectivity that motivates research to pursue the fallacy of defining knowledge by transcending human embodiment and cultural entrenchment (Raelin, 2007). The alternative to objectivity is that knowledge is the result of an ongoing interpretation that emerges from the capacities of understanding, which are rooted in human biological embodiment and are lived and experienced in a shared cultural context.

4.2 Situation of concern within Information Systems Project Management Research

Thus far, the thesis has highlighted several concerns researchers in the discipline of project management have identified with the tradition of the discipline being too focused on the development and dissemination of prescribed best practices. Chapter 2 showed that since the new millennium, researchers have placed significant emphasis on understanding as-lived experiences as a way of deepening the awareness of actual practice. The main motive for this appears to be the concern that prescribed practices do not adequately explain project practice. The previous chapter also highlighted that IS projects target accomplishments that depend on the creative and innovative efforts of people. This chapter will pursue the proposition that IS project practices should embrace the assertion that human beings exist in the world in a manner that is not primarily rational, disengaged and reflective. A desired outcome of this chapter is a new frame to understand IS project practices that

embraces and reflects an understanding of daily existence that is embodied, building on Hegel's point that existence does precede essence (Guignon & Pereboom, 1995, p. 249).

For the majority of practitioners the best practice view is the primary frame which is used to understand a project process. Any resulting frame will compete with the established, accepted, Cartesian frame of a detached rationality. In the Cartesian frame, embodied experiences are not accepted as valid experience and need to be doubted (Taylor, 1993, p. 203). Only atomistic pieces of data acquired through sensory experience, without acknowledged bias, and processed by a rational mind can yield a truthful view of reality. Influences not within the field of sensory experience do not exist in the Cartesian frame. The Cartesian tradition portrays human everyday lives as a picture of disengaged subjects engaging in a world of objects. The practical affairs of everydayness in this frame are seen only as constraints that limit our ability to be careful and thorough in evaluating our beliefs (Guignon, 1983, p. 197; Taylor, 1993). The aim of this chapter is to develop a regional ontology which will collect the scattered practices that IS project practitioners and researchers engage in and unify them into coherent possibilities to serve as an exemplar for practitioners and researchers to engage more meaningfully in the as-lived experiences encountered in IS project practice.

The theoretical concepts from the work of Martin Heidegger and Pierre Bourdieu present an opportunity for the construction of a regional ontology. Martin Heidegger's fundamental ontology gives a general account of daily existence, while Pierre Bourdieu's theory of practice gives a conception of human action or practice that can account for its regularity, coherence and order without ignoring its negotiated, strategic and embodied nature. Both Bourdieu and Heidegger rejected the subject-object dualism promoted by the Cartesian tradition, and promoted forms

of social construction. Many theories of social construction exist but Bourdieu theorises about human practices hence his work is preferred.

4.3 Heidegger's Fundamental Ontology

Heidegger claims that over the centuries virtually all our practices have become ensconced in the assumption that there is a difference between inner experiences or consciousnesses and things or objects that are physically in the world. This assumption is often referred to as the Cartesian dualism (Guignon, 1983, p. 13). Heidegger highlights how this assumption presents many problems for society; for example, the adoption of such a world-view has concealed original possibilities of understanding existence and social practices. Accordingly, certain problems become perpetuated and accepted as natural and obvious. An instance of such a problem could be the ongoing refinement of the PMBOK process despite practitioner concerns about the practice being a small part of the overall experience of working on projects.

Heidegger presented a fundamental ontology using the concepts of *being* and *Dasein*. *Being* is intended to represent the background that makes it possible for human beings to be presented with a familiar world which offers affordances. *Dasein* is Heidegger's reference to describe human beings in general and also individual beings. The traditional Cartesian approach to understanding reality that human beings are confronted with makes extensive use of what Heidegger describes as *substance ontology* which makes believe that the world is constituted of a vast number of substances with properties. Descartes used the substance ontology to understand human practices. Descartes referred to human beings as *res cogitans* to imply that human beings are thinking substances. There are a number of views which claim that this attitude of Descartes has led to the wider acceptance that human beings are just minds connected to bodies. These beliefs have become

entrenched and have led to the acceptance of the separation between mind and body, and subsequently the acceptance of cognitive tendencies which assume all practices are acted out in a rational thinking and doing cycle.

Heidegger does not deny that it is possible to think about substances in a detached theoretical manner. Instead, he accepts that this is but one way of understanding, which is a regional way and is not the primary way in which *Dasein* exists in the world. Heidegger's concern is the result of the realisation that this theoretical attitude has eroded more fundamental ways of understanding existence. In response, Heidegger proposes a fundamental ontology which outlines the existence of *Dasein* in *being* and *time*. Heidegger builds on the efforts of Husserl, Kierkegaard, Nietzsche, Dilthey and Descartes by presenting a holistic account of *Dasein*.

For Heidegger, unlike *res cogitans*, *Dasein* is not a thinking substance; instead it copes in the world by undertaking practices that are presented which *Dasein* has been socialised into. *Dasein* undertakes practices because of already understood beliefs of how these relate to its identity. Heidegger refers to this as *Dasein* taking a stand on its *being*. This frame differs fundamentally from the cognitive tradition that human beings sense objects through the properties these objects present and then choose actions. Instead, Heidegger believes that the background, or *being*, always presents affordances for *Dasein* that are unique and intelligible. Heidegger's fundamental ontology describes three modes of *being*: readiness-to-hand, present-at-hand and existence. Firstly, there is *Dasein*, with its primary mode of *being* as existence and having to take a stand on its *being*. Secondly, there is equipment whose primary mode of *being* is ready-to-hand. Finally, there are substances whose primary mode of *being* is *presence-at-hand*. The fundamental ontology is an account of daily existence of *Dasein* in a world with equipment and other substances.

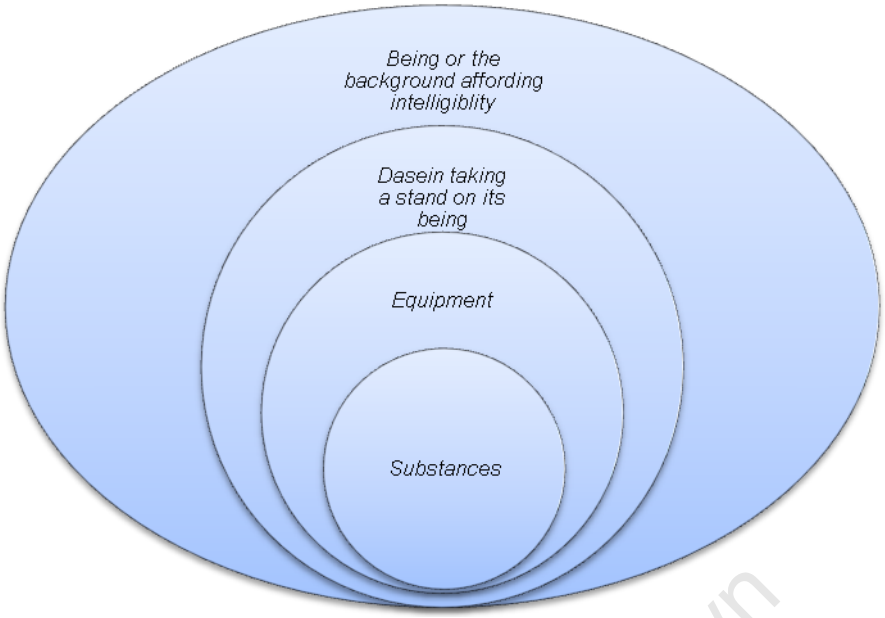

Figure 4: The horizon of *Dasein's* intelligibility

4.4 Existentialism

Heidegger's contribution is considered to be a contribution within the field of existential phenomenology or metaphysics; metaphysics has a similar connotation to ontology. Existentialism emerged as a response to the major shifts that occurred in 16th and 17th centuries that resulted in the establishment of a modern world view. Jean Paul Sartre defined the essence of existentialism as the idea that, for humans, existence precedes essence: that we are, and what gives our lives significance, is not pre-established for us, but is something for which we are ourselves responsible (Guignon & Pereboom, 1995, p. 20). Along with Heidegger, the works of Kierkegaard, Nietzsche, and Sartre also contribute to the existentialist research genre. These existentialists were mostly concerned with the postmodern era and the extent to which a loss of enchantment pervaded at this time (Guignon & Pereboom, 1995, p. xvi), what the sociologist Max Weber defined as a loss of enchantment. According to Weber, in traditional or pre-modern societies people experienced the world as an "enchanted garden", a world in which nature is

understood as meaningful, value filled, and with defined order that determines the proper function and aim for each thing in advance. Existentialists saw the loss of these traditional absolutes as a shattering event; the era is described as a time in which people found themselves “abandoned”,” forlorn”, “thrown” into the world with no pre-given justification or direction. Existentialists were concerned because without a unifying value system, nihilism was bound to fester (Guignon & Pereboom, 1995, p. xvii). Heidegger’s work indicates that looking for understanding and meaning is a basic need of *Dasein* (beings).

Hegel and Marx on the other hand saw postmodernism as a chance for beings to strive for a better life. These philosophers shared the view that the modern era freed people from a lot of pointless illusions. Hegel stated two principles that human beings are defined by. Firstly, human beings are organisms amongst others in nature, whose needs are not that much different from those of animals. Humans beings are, however, different from animals. This led to Hegel’s second difference which states that while animals cannot transcend the limits of their immediate needs and drives of nature, human beings can transcend these limits because they are capable of reflecting on themselves and evaluating themselves in the light of some over-arching vision of what their lives are adding up to. Heidegger and Sartre build on this view by stating that the essence of transcendence is unique to humans because their *being* is in question or an issue for them. Moreover, human beings are not content with just satisfying their basic desires because they care about what kind of beings they are, and therefore reflect on the worth of the things they desire. Hence human beings are capable of forming second order desires about their basic desires (meta desires), and regulating immediate inclinations. Human existence is therefore constantly agitated by aspirations that go beyond immediate needs and impressions. Because of this agitation Hegel says *Dasein* can find no peace (Guignon & Pereboom, 1995, p. xviii). In accordance with the primary nature of

being human it is up to each one of us to choose projects to suit the sort of individual identity that we want to create. Based on these premises, Sartre claims that each human being is self making, or self constituting: we are what we make ourselves throughout our lives despite the circumstances we are born into (Guignon & Pereboom, 1995, p. 249).

4.5 The Motivation for Heidegger's Contribution in *Being* and *Time*

Heidegger builds on Hegel's point of existence preceding essence and gives a rigorous account of daily existence as experienced by human beings in his magnum opus: "Being and Time" (Heidegger, 1962). The aim of "Being and Time" was to work out the question of daily existence in general by giving a characterisation of the different possible ways of *being*, of human beings (Guignon, 1983, p. 14). Heidegger began "Being and Time" by stating that the aim of this book was to answer the question: "What is the meaning of *being*?" Aristotle's account of metaphysics begins similarly with the words: "All human beings by nature reach out for understanding" (Guignon & Pereboom, 1995, p. 176). Both Heidegger and Aristotle state that questioning the meaning of *being* is the most basic question humans may ask; yet, in both their cases, nothing that they were taught or studied prepared them for this question. Despite the lack of preparation to answer such a question, both Heidegger and Aristotle were convinced that human beings naturally strive for an understanding of their *being*, as Hegel had argued. Heidegger therefore claims that his fundamental ontology is merely a more rigorous version of what we are doing all the time. In "Being and Time" Heidegger attempted to create a characterisation of human understanding for the development of other regional ontologies. To fully appreciate Heidegger's fascination with the meaning of *being,* it is necessary to reflect on the contemporary philosophical challenges of the time which provide much

of the motivation for Heidegger's magnum opus (Guignon, 1983; Guignon & Pereboom, 1995).

4.5.1 The structure of traditional epistemological arguments

In the second edition of the "Critique of Pure Reason" the philosopher Kant expresses his concern about the problem of knowledge in the eighteenth century. Kant voices disbelief that sufficient progress was not made in philosophy to make the rationalisation of people's beliefs more rigorous. Kant claims that:

> *it remains a scandal to philosophy and to human reason in general that the existence of things outside us must be accepted merely on faith, and if anyone thinks good to doubt their existence we are unable to counter his doubts by any satisfactory proof (Smith, 1963).*

Kant tried to redress this issue by modifying the philosopher Descartes' claim that the only thing that people cannot deny is that they exist. Descartes claimed that all objects in existence in space outside of us can be doubted because they are indemonstrable. Kant's rebuttal of Descartes claim is achieved by showing that inner experience, such as the claim "I exist", is only possible through general outer experiences (Guignon, 1983, p. 12).

Heidegger did not agree with Kant that the role of philosophy was to provide such proofs. Heidegger did, however, accept that these epistemological arguments should exist, and are natural, and will perhaps exist forever. Heidegger saw the role of philosophy as one of providing an ontology to facilitate such proofs, instead of being focused on epistemology, as Kant appeared to believe. Heidegger was intrigued that Kant and others took for granted the separation of inner experiences in the mind or consciousness from external objects. Heidegger saw this as the fundamental

problem that needed resolution. This problem is often referred to as a Cartesian legacy; and generally such a reference defines the residue in our reasoning where the world comprises minds and matter. Heidegger's review of the Cartesian model is one of the primary motives within the greater project of "fundamental ontology" undertaken in "Being and Time".

Heidegger claims that the problems which captivated philosophers in the 18th century can be attributed to the world view that emerged in the 16th and 17th centuries with the culmination of the scientific world view. Heidegger saw the emergence of the scientific paradigm as a paradigm that had both a concealing and a revealing function. While it enriched human lives, it also concealed older and more original possibilities of understanding ourselves and our world. With the perpetuation of the scientific paradigm and the subtle effect of the Cartesian model on thought, the set of problems Kant and others were fascinated by seemed obvious and natural. During the 16th and 17th centuries there was growing complacency that, with science and understanding, full mastery and domination over all beings, nature, and the world could be achieved. The philosopher Descartes was fascinated with the scientific paradigm. At times he compared people to machinery. Descartes is quoted as comparing a sick person to a badly made clock, and a healthy man to a well made clock (Gardner & Joseph, 1972, p. 278). In his efforts to build a complete model of natural science that could form the foundation of our beliefs, Descartes extended his mechanistic view to all living organisms. What is problematic is the extent to which it is believed that the world is a vast aggregate of material objects with quantifiable properties like mass and velocity that are inherently held by the objects. What Heidegger finds particularly problematic is that we lose sight of the fact that we are subjects, or minds, capable of representing objects in our minds and developing attitudes and beliefs about these objects. Hence, we have an objective reality made up of objects out there, and we have subjective projection of our own feelings and

desires onto things. According to Heidegger such reasoning assumes that there is a vantage point to which it is possible to retreat from the *thrownness* of *being*. Heidegger saw the need to shift this centeredness of subjectivism and instrumentality to a more primordial sense (Guignon, 1983, p. 20).

Heidegger challenges the two primary assumptions underpinning the Cartesian model. This rebuttal takes the form of a description of our everyday lives that focuses on our involvements in the world, instead of understanding based on presuppositions or common sense. From "Being and Time" it is also apparent that global understanding is neither possible, nor necessary (Guignon, 1983, p. 38).

4.5.2 Rationalism and life philosophy

Heidegger's mentor and teacher Edmond Husserl was also influential in the development of a fundamental ontology. Husserl believed in and pursued the Cartesian quest by trying to find the basic building blocks from which rational reconstruction of our experiences and practices can begin. This effort led to the culmination of Husserl's approach to phenomenology. Husserl claimed the self grounding consciousness or transcendental ego could be invoked by bracketing existence; Heidegger later disagreed with these assertions. Heidegger was also very influenced by the hermeneutics credited to Dilthey and also used these concepts. Dilthey said that life does not point to anything beyond itself; it is something that is known from within and which we cannot go behind. Hence life cannot be brought before the judgment seat of reason. Life then should be the starting point for philosophy. Martin Heidegger builds on Dilthey's ideas. Heidegger holds that:

> *Meaning is not a world to itself which must be grasped as static and resting in itself; meaning is much more what is inherent in factical life, and*

> *its structure must be conceived according to life. Life is in effect a context of significance (Guignon, 1983, pp. 56-57)*.

4.6 *Dasein*, Disclosure and Equipment

Haugeland (1992, p. 27) makes the declaration that "*Dasein* is its disclosedness". By this he means that *Dasein* cannot be understood apart from is disclosedness. There are two ways of understanding this. Firstly, all understanding is pervaded by *Dasein's* existence and there is no escaping existence to acquire detached or disembodied understanding. Secondly, when *Dasein* is already *involved-in-the-world*, *Dasein* is in the world skilfully coping by taking up affordances presented to *Dasein*; there is no difference between *Dasein* and the world. Being-in-the-world is an existential concept rather than a spatial concept and can be described as the sense of awareness we (human beings) have of our existence amongst others in the world (Haugeland, 1997; Introna, 1997). As illustrated in the first chapter the concept *Dasein* is used to present the fundamental ontology and can be roughly translated to *there* (Da) *being* (Sein). Existence then implicitly is *being* already involved and *being* in a familiar world that is understood. If *Dasein* is a living way of life with *being*-in-the-world as its basic make-up then individual people are instances of *Dasein*. Haugeland states that an instance of *Dasein* is a peculiar integration and adjustment of various public ways of life (roles) that are idiosyncratically adopted and lived by one person.

4.6.1 Disclosure and understanding

Dasein's primary way of *being* is existence and of *being* already involved in a world with equipment and substances. Heidegger tends to think only human beings exist. According to this assertion, animals, trees, rocks, hammers, books, buildings, etc., are, but they do not exist. For this reason Heidegger claims that the primary mode of

being of equipment is *readiness-to-hand* and the primary mode of existence for substances is *presence-at-hand*. *Being* refers to the background that presents the equipment, other beings and substances with unique affordances to *Dasein*. *Dasein's* understanding of its *being* manifests itself in its behaviour and the subsequent practices *Dasein* undertakes.

A person's ability to be conscious of *being* amongst others in the world is always available; it is, according to Heidegger, *ready-to-hand*. *Dasein* is, however, not a subject in a world of objects, but a clearing that discloses the "*being*" of a person. Hence a person cannot choose moments to be in the world and subject to the worldly influences, and moments to avoid these. Worldliness pervades all relationships and interactions with objects and equipment of the world. The concept of intentionality as directed activity from the mind through various states, activities or attitudes is dispelled in Heidegger's fundamental ontology.

Dasein either exists factually by a clearing that discloses, or as thrown projection. In thrown projection the mind gets caught up in its own turbulence. In factual existence the world is disclosed through the following ways of *being*: *so-foundness* (*Befindlichkeit*), *telling* (*Rede*), *understanding* (*Verstehen*) and *falling (Vervallen)*. *Understanding* is sometimes referred to as a way of being but it is also implicitly part of the other ways of *being.* This is explained further below. The circumstances of already *being-in-the-world* are applicable to all these states; hence there is no predefined sequence to the way in which these ways of *being* are disclosed (Haugeland, 1992).

In disclosure there is always a *so-foundness* by being confronted with circumstances, situations or business requiring attention. Heidegger says that *so-foundness* discloses *Dasein* in its *thrownness. Thrownness* compels action, because not acting

implies taking no action because of *Dasein's* stance of *being* already involved-in-the-world. Our receptiveness to mattering is called *so-foundness*. As beings-in-the-world *Dasein* is always affected in some way or another and affectedness is typically indicated through moods: sensibility to age, aggressive culture of a corporation, eager mood in the class-room or the mood of an individual (H. Dreyfus & Hall, 1997). *So-foundness* is articulated (*telling*) by *Dasein* to make the current situation coherent and visible. This articulation need not be vocal. Such *telling* is done in a way that is intelligible within the immersed social context. Both *telling* and *so-foundness* pre-suppose each other. The question of language and accessing consciousness was discussed in chapter 3 and will not be repeated. *Falling* is the reference to *Dasein falling* into socialised routines and acting within the norms and conventions of a particular context.

Understanding is implicit in all three modes of being. There is primary understanding reflected in *Dasein*'s deep involvement in the world undertaking activities *for-the-sake-of-which* that are presented as affordances by the background. This mode of understanding is unreflective and is not noticed. In *so-foundness Dasein* displays "*fore-having,*" that is, being confronted with a familiar background which is experienced as a network of solicitations. At times *Dasein* may display "*fore-sight*", that is, the ability to circumspectly pick up an aspect of familiarity or affordance to focus on. This could lead to *Dasein* being dragged out of absorption to make an assertion or predication. Asserting will result in a narrowing of the context by dimming the rest of the background. Assertion or predication articulates either (*telling*) a general property or a situated property.

A situated property comes from the context of involvement while a general property relates to the object. Through such assertions pre-conceptual, tacit experiences are conceptualised and made concrete. Concrete understanding results in enriching the

inter-connected context (background) with further understanding, for example an object with properties. The object being asserted is temporarily delineated from the background. As a result of such learning *Dasein* is able to display "*fore-conception*" in situations, allowing *Dasein* to have "*fore-grasp"* of something within the totality of the chain of assignments. Ultimately this allows *Dasein* to respond circumspectly to being drawn into these affordances.

4.6.2 Equipment

Heidegger uses the term *equipment* to refer to objects used by beings in their daily existence. Once a piece of equipment is used it immediately subordinates itself to the *in-order-to.* Once the piece of equipment is put into use it withdraws. When the *equipment* is withdrawn it is *being* used or available for use authentically. The primordial relationship with equipment is therefore in using it in everyday involvements to the point that it becomes unthought-of (subconscious). *Equipment* withdraws only when there is a referential whole or purpose guiding the equipment use. When the referential whole fragments, *equipment* becomes occurent, present-at-hand, or *vorhanden*. The fragmentation of the referential whole or "breakdown" can result when the equipment malfunctions, or the pursued purpose is not valued anymore. At the point of breakdown the objects that are occurent leap out and become objects placed in front of subjects. At this point the pursuit of outcome is abandoned and the object becomes the substance with properties. Traditional intentionality appears to come into play at this point and it appears as if the being is a subject using an object "in-order-to".

Readiness-to-hand (*Zuhandenheit*) is the way-of-*being* of equipment which implies a known use within a set of practices for a certain culture. The primary reason or the purpose of engaging in an activity is called the for-the-sake-of-which. The for-the-

sake-of-which does not circulate randomly or haphazardly; instead, the involvement-whole may be viewed in terms of a set of already-there relationships that come to exist as beings acquire capabilities through learning and as they are socialised into practices throughout existence. These acquired abilities remain at their disposal. The choice of which ability to apply in a certain context is embodied and can be unreflective (Guignon, 1983, p. 101).

4.6.3 Das Man

Dasein's ability to take up practices illustrates that *Dasein* has mastered some articulated social structure that contains standards and norms for interaction. Because the social structure is a public role it will have norms to judge "correct" and "incorrect" ways in which the role can be conducted. A similar argument applies to the use of equipment. According to Heidegger, due to *Dasein's* participation in a shared world, *Dasein* handles equipment as anyone does and behaves as anyone does and he therefore refers to *Dasein* as *das Man* (Guignon, 1983, p. 107). Although these are public roles, *Dasein's* competence in these roles is always a self realisation. According to Blattner (1996) *Dasein* is only to be identified with self-interpretive characteristics that define ability. Take for example the ability characteristic of being able to facilitate a meeting as interpreted by a project manager. This ability characteristic can be exercised to varying degrees. The practices taken up by *Dasein* being self interpreted have some meaning and relevance to *Dasein*. *Das Man* is therefore the source of the structures of significance that make up the world. It is therefore the *res cogitans* that Descartes referred to and the *transcendental ego* that Husserl referred to (Guignon, 1983, p. 110). *Dasein* draws its pre-ontological understanding of *being* from *das Man* and undertakes roles and understanding in accordance with this shared cultural context.

In other words, all our understanding and interpretations are drawn from a pool of public interpretations.

Heidegger believed that the tendency to settle into accepted roles and norms has the side effect of forgetting the background and as a result forgetting that our existence is in question or an issue for us; that is, our existence is an ongoing future directed activity and our *being* in its entirety is being influenced all the time. The forgetfulness is compounded by our every-day lives because *Dasein* gets absorbed in the latest fad and tends to move from fad to fad. In this manner we cover up more primordial ways of understanding existence as we settle into the public ways of *being* and what *das Man* does. Heidegger refers to this settling into the latest fad as *falling* (Guignon & Pereboom, 1995, p. 197). The term primordial has both transcendental and historical signification. Firstly, to say A is more primordial than B can mean than A is a precondition for the possibility of B. Alternatively we can say that B has a parasitic existence based on A by *being* grounded in the existence of A. Take for example Heidegger's statement that encountering a hammer in hammering is more primordial than encountering a hammer thing. In this example mere observation of a hammer thing is a special derivative case of our involvement in the practical activity of hammering. In a historical sense this would imply that A occurred earlier than B, or is more ancient than B. For these reasons Heidegger uses the term primordial to point to a more basic, simpler form of the experience because he claims that all our encounters in the world are variations of the same basic experiences (Guignon, 1983, p. 78). Heidegger claims that the relevance gets lost through reflection or taking an objectifying view of the self and through falling into public ways of *being*. For this reason Heidegger believes that science and modernism has not provided more primordial ways of understanding existence; in effect, taking an objectified view erodes and distorts any sense of self that exists (Guignon, 1983, p. 109).

Heidegger believed that once the full import of just taking up public ways of *being*, or settling into whatever roles come along is grasped, *Dasein* can become authentic. By this Heidegger means that *Dasein* can take hold of its existence and give it coherent shape by taking a stand on its *being* (Guignon & Pereboom, 1995, p. 199).

4.7 Summary of Relevant Heideggerian Concepts for the Regional Ontology

Heidegger believed that human beings are always confronted with meaningful situations. He also believed that things are intelligible not on the basis of some inner content but on the background which illuminates them. The background is presented by Heidegger in a rigorous manner to show how beings are presented with a meaningful world that represents the interconnected social world *Dasein* gets socialised into. Many concepts are used to describe the background because the background does not solicit *Dasein* in a fragmented way as individual objects with properties presenting affordances, but as an interconnected context that is meaningful. *Dasein* is drawn to these affordances and takes these up to take a stand on its *being*. These affordances are an expression of implicit understanding which is pre-conceptual and the basic way of coping of *Dasein*. Meaning is therefore a result of the *existentialia* of *Dasein* rather than some mental content. Heidegger's contribution is that he does not start from perception in presenting a fundamental ontology but starts from being involved-in-the-world. He is the first philosopher to attempt to do this. Aristotle, Descartes and others all started with detached contemplation.

Heidegger also shows how *Dasein's* socialised condition, as expressed by the affordances in the background, evolves as a result of daily interactions. The background becomes richer through daily activities. Nodes of significance are added

to the interconnected background as a result of *Dasein's* situated experiences. This learning is explained by Heidegger in a general manner using a number of concepts. Through this process Heidegger demonstrates the manner in which *Dasein's understanding* can vary across contexts along a continuum from primary understanding in certain contexts to a more circumspect understanding in other contexts.

Through daily coping the background becomes richer as more nodes of signification are added to it, allowing *Dasein* to move from being drawn into the affordances to being able to project into possibilities. All new nodes of signification retreat into the general background. Heidegger provides an existential account of *Dasein's* involvement in the world and accounts for *Dasein's* ability to break-away from being-involved-in-the-world to de-world entities by standing outside a situation to reflect on objects with properties to theorise.

All these concepts give insight into the structure of daily existence and will be used as a set of foundational concepts to define the regional ontology. The work of Bourdieu is discussed in the next section.

4.8 Bourdieu's Theory of Practice

Bourdieu believed there is more to social life than the subjective consciousnesses of the actors who move within it and produce it. In support of this belief, Bourdieu suggested that there are objective social realities beyond the self conscious awareness of individuals (Jenkins, 1992, p. 17). And once these objective perspectives are grasped they become an influence to the normal reasoning process and acquire motivation and autonomy to become a background influence. This background influence differed from the traditional notion of structure put forward by

Claude Levi-Strauss, in that Bourdieu rejected the over ordering that structuralism produces. Bourdieu tries to point out the difficulty with over ordering in a natural world with cultural people in it. Structuralism puts foreword the notion of the existence of an unconscious domain of effect and cognition, interpretable and detectable only through its reflection in the expressive forms which are assumed to be its product (Jenkins, 1992, p. 31). According to Bourdieu social structures exist at two levels. At the first level there is the objectivity of the first order which represents the material resources that are a means of acquiring socially scarce goods and values. Then, there are the systems of classification; the mental and bodily schemata that function as symbolic outlines or templates to influence the practical activities such as conduct, thought, feelings and judgments of social agents (Bourdieu & Wacquant, 1992, p. 8).

4.9 Overview of *Field* and *Habitus*

Bourdieu refers to first order structures using the concept of *field* to emphasise the pressure exerted or the magnetic pull the field exerts, while *habitus* captures the second-order structures, i.e., schemes of classification and evaluation internalized in people's minds and bodies. *Habitus* is derived from Latin and refers to a habitual or typical condition, state or appearance, particularly of the body. Prior to Bourdieu's use of *habitus,* the concept had been used in the work of Hegel, Husserl, Weber, Durkheim and Mauss to describe an acquired system of generative schemes which can be adjusted to particular conditions (Jenkins, 1992). For Bourdieu, *habitus* has the following meanings: Firstly, it only exists in as much as it is inside the heads of agents. Secondly, *habitus* only exists in, through, and because of, the practices of actors, and their interaction with each other, and with the rest of the environment in ways of talking, ways of working, etc.

According to Bourdieu, *habitus* is espoused to be a set of individual prejudices that predispose the individual to engage in behaviour that is compliant with the practices of his or her community. Bourdieu formulated *habitus* to compensate for the limitations inherent in pure structuralism and social phenomenology. Being against too much emphasis on structuralism, Bourdieu argues for more emphasis on active and competent agency. Sociological debates are renowned for being polarised on structure or agency with researchers arguing to privilege either structure or agency. Bourdieu's contribution emphasises the relational nature of the influences of structure and agency instead of a rule based formulation proposed by Claude Levi-Strauss. Bourdieu does not dispute the explanatory value Claude Levi-Strauss' contribution affords, but points out that the effects of structure on the agents are the regularities observed by the researcher and therefore are subject to what the researcher finds significant. Moreover, the circular and relational influence between structure and agency is not compensated for. Further, according to Bourdieu, the emphasis on rules for specific social situations fails to explain the messy and strategic nature of social practice that he had encountered in his own research. These concerns led Bourdieu to the formulation of *habitus* as the concept that can account for the regularity, coherence and order of human action or practice without ignoring its negotiated and strategic nature (Crossley, 2001, pp. 82-83).

An agent's *habitus* is an active residue, or sediment of the past that acts as a background influence to shape perception, thought and action, thereby moulding practices in a regular way. According to Bourdieu, *habitus* functions at a level that is below consciousness and provides forms of know-how, dispositions, schema and competence. The concept of *habitus* effectively accounts for the dispositions and competence that both generate and shape action. What is added by the concepts of field and capital is an account of the context of action, the resources available to the actor within that context, and the respective roles these factors play in the shaping of

the action. Moreover, these concepts focus our attention upon the differentiated nature of the contemporary social world.

Bourdieu's concepts of *field*, *habitus* and capital only function fully when in relation to one another. The concept of capital is explained further in sections 4.10 and 4.13 below. Figure 5 gives a directed model of the concepts with structure representing the fields with their respective forms of capital.

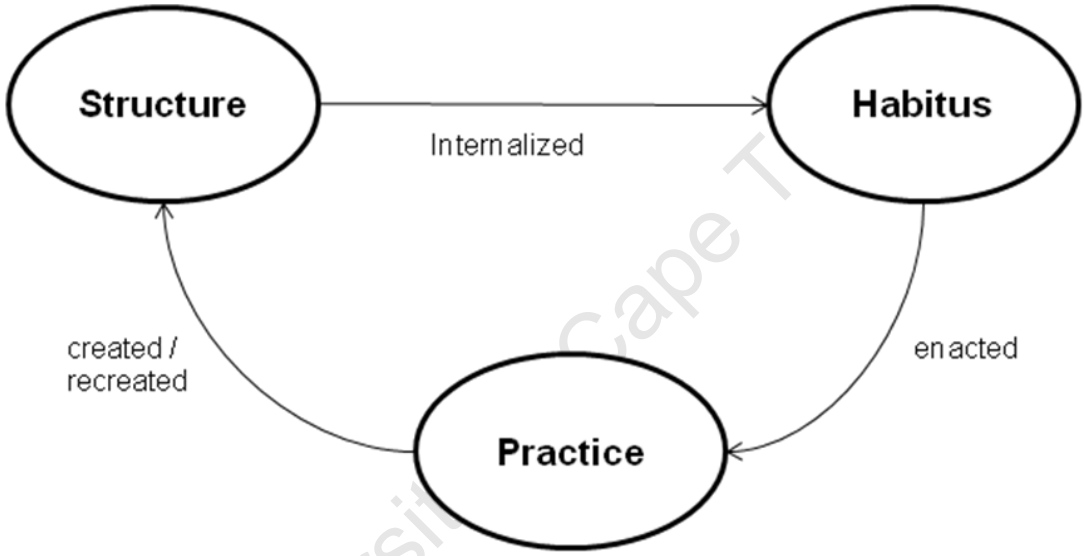

Figure 5: Summary model of Bourdieu's Theory of Practice (Harker *et al.*, 1990)

4.10 Social Construction Explanation Afforded by the Theory of Practice

According to Naidoo (2004, p. 468) a *field* produces distinctions effecting class amongst agents. In a *field*, actors struggle to maintain or improve their positions vis-à-vis other players. This is accomplished through the accumulation of different forms of *capital* including economic, cultural and symbolic *capital.* Multiple fields or spheres

of play define the objectified social structures that characterize a society. A *field* consists of a socially constructed space with its own values and possesses its own regulative principles. These delimit a socially constructed space in which agents struggle to change or preserve the boundaries, shape or form of the *field*. Agents or objects in the *field* vie to acquire forms of social *capital* operative in the *field*. The fields exert influence on the objects in the *field* and individual's reactions caused by the *field* forces are a function of the internal structuring of each individual. A *field* exerts influence over individual objects who wish to change the status quo or preserve the status quo. The *field* therefore becomes a game, or a space for conflict, competition or cooperation for forms of social *capital* recognised within the *field*. As the game in a specific *field* progresses the very shape and division of the *field* becomes a central stake, because changing the distribution or relative weight of forms of *capital* in the *field* is tantamount to changing the structure of the *field*. The battle or social practice in a *field* is regulated to give pattern to the various activities.

The *field* refers to always existing, obligatory boundaries of experiential context: a relational configuration endowed with a specific gravity which it imposes on all the objects and agents which enter it (cited in (Widick, 2003)). We move through different fields but the collection of fields we confront tends to be common for different social groupings (e.g. information systems project practitioners, researchers, etc.) Fields engender and require certain responses; they oblige individuals to respond to themselves and their surrounding in specific ways to the point that the responses are habitual. Thus the *field* instantiates and reproduces social distinctions via the enactment of *habitus* (Adams, 2006). A *field* is bound not by physical boundaries but by constraints on which agents can engage with which positions. Hence, similar to *Dasein*, a *field* is not a spatial concept but an existential one. A *field*'s boundary in institutional settings is normally illustrated by certifications, specialized training, competitive selection, class based exclusion, or inclusions, and

economic, or symbolic resources (Hanks, 2005). The cultural conventions of a class become inscribed upon the body, and are reproduced in personal enactment in the *field*. Hence the cultural conventions are reconstituted in a loop of agency and structure. For Bourdieu the body assimilates these cultural inscriptions from early childhood through a socialising process (Jenkins, 1992).

4.11 Concerns with the Theory of Practice

Bourdieu's theory of practice has received a number of critical reviews. The scholars offering critique appear to fall into two camps. There are those who seem to accept the claimed limitations too easily and therefore miss the real opportunities the theory does present. At the same time there are those who see the potential the concepts provide in rendering more alternatives to explain and explore. The primary criticism appears to be concerned with Bourdieu's failed attempt to transcend the polarity between objectivism and subjectivism because he is reported to fall prey to the very polarity he claims to transcend. The other concern critics have is that the concepts of *habitus* imply both strategic and unconscious practice. The critics appear to think that strategic action cannot take place without conscious cognitive activities. Furthermore, although Bourdieu emphasizes that habits facilitate improvisation, he does not take the next and important step of considering how the underlying structures or principles of fields of practice mutate over time. Consequently the theory attracts concerns about the determinism that is expressed (Harker, Mahar, & Wilkes, 1990; Bourdieu & Wacquant, 1992; Jenkins, 1992; Vandenberghe, 1999; Crossley, 2001)

4.12 How Bourdieu's Concepts can be Used to Craft a Regional Ontology

Bourdieu's theory of practice offers a directed model to grasp social construction or engaged agency. This model has, however, been critiqued for being inconsistent and not being rigorous. On the other hand there are also researchers who promote its value and offer suggestions to deepen the concepts to make them more rigorous. Amongst the many suggestions given to improve Bourdieu's theory, two options stand out: critical realism to better explain the objective structures; and phenomenology to make the concept of *habitus* more rigorous. Crossley advises that the insights of phenomenology can enhance the theory of practice that Bourdieu has developed (Crossley, 2001, p. 99). Habit is not a mechanical response and neither is it acquired in a mechanical fashion. Moreover, neither is a habit a reflective or intellectual phenomenon. It is a phenomenon that forces us to abandon each of these false alternatives in favour of a more existential focus upon our simultaneously meaningful and embodied manner of *being-in-the-world* (Crossley, 2001, p. 107). It can be argued that the concept of *field* is very similar to Heidegger's concept of the *background* or *being*. Bourdieu's concept of *field* offers a more practical way to structure and organise the *background* into regional influences rendering them more explainable. The concepts of *Habitus* and *Dasein* complement each other and offer the opportunity to use the concepts of Bourdieu and Heidegger in a complementary manner.

4.13 Regional Ontology

The essence of human practice, according to both Bourdieu and Heidegger, is that practices are primarily embodied, cloaked with signification mostly to conform to public roles, and at times these practices are reflective. For the most part human

beings engage in activities because of the significance these activities present to the person undertaking them. The context of engagement in human practices is a shared world of other beings, cultural equipment and substances. The standing of the social practices is constantly evolving. Any effort to describe the essence of project practice has to therefore be based on the following principles:

1. Primary mode of *being* is existence.
2. Human beings are self-organising.
3. By implication then practices are emergent.
4. Practices are embodied as result of engaged agency.
5. Practices promote ideological beliefs amongst those who undertake them.
6. Being reflective is a special case of the general way of *being* in the world.

These principles are used to construct the regional ontology given in figure 6. The regional ontology suggested is a combination of the concepts of Bourdieu's theory of practice and Heidegger's fundamental ontology of *Dasein*. These concepts are used in a complementary manner to explain the existence of *Dasein* in a network of regional fields of influence related to Information Systems project practice. Bourdieu's concept of structure represents social *fields* of influence which exert pressure on agents to behave in particular ways. If these structural influences offer affordances then the concept of structure is similar to what Heidegger refers to as the background or *being*. The background that offers the various affordances to *Dasein* is rendered more explainable using Bourdieu's concepts of *field*. Bourdieu's concept of the *habitus* can be equated to the three modes of *being*: *Dasein*, with its primary mode of *being* as existence and taking a stand on its *being*; equipment, with its primary mode of *being* as *readiness-to-hand*; and substances, with its primary mode of *being* as *presence-at-hand*. These three modes of beings offer a proxy for how *Dasein* internalises and copes with the affordances presented by the social fields (background).

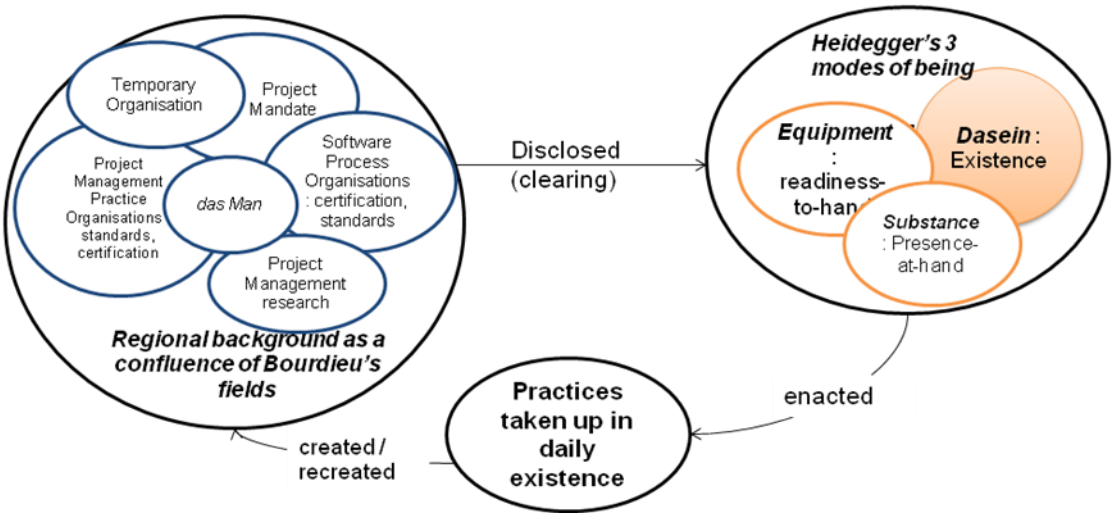

Figure 6: Enhancing of Bourdieu's Theory of Practice (Harker, 1990) to establish a regional ontology for IS project practice

Although *Dasein* and the world appear to be separate in Figure 6, they both constitute the world. It is only in breakdown (reflexive moments, or taking a theoretical attitude) that aspects of the *clearing* (regional background) become pronounced. It is important that this reflexive potential is not overestimated. Bourdieu also emphasises that the habits demanded by everyday life tend to go largely unnoticed until periods of crisis bring them to light. Heidegger has the same comment to make to describe *Dasein* when it is engaged in the world. In disclosure, the same shared world is disclosed; the affordances disclosed are unique to the *dasein* experiencing the disclosure and the uniqueness is related to the stand *Dasein* is taking on its existence.

The field representing the **software process organisations** illustrates how these organisations offer certification and standardisation which promote ideologies of being professional, qualified and capable. The professional ideology probably appeals to practitioners because it offers a means by which they can demonstrate varying degrees of competence to differentiate themselves. The community

comprising managers, stakeholders and suppliers stands to recognise this form of capital because the institutions promote the forms of certification and standardisation as symbols of professionalism, competence and quality. There will thus be normative pressure for practitioners to adopt these standards and recognise the qualifications that symbolise professionalism and competence. On specific projects these will be experienced as pressure to use specific methodologies, processes and practices enshrined by the various forms of certification and standards. The unified process and UML modelling are examples of a technical methodology that represents a form of certification and standardisation that is used to illicit and represent the IS requirements.

Similarly, the fields of **project management practice organisations** offer forms of practice and standards such as PMBOK, ITIL, PRINCE2, COBIT, CMMI levels, etc. As with technical methodologies, Project Managers will feel normative pressure to adopt, recognise or claim to be practicing and adopting these processes and practices because the community of IS project managers and practitioners recognises these forms of capital as ways of differentiating ability, demonstrating competence and adopting credible work methods. One of the ways in which the actors on projects can play this game is to claim or motivate for varying degrees of conformance to specific practices and standards.

Both the fields of **project management practice organisations** and **software process organisations** have undergone similar structural changes as a result of the struggles amongst actors. The struggles have been experienced as the adoption and promotion of ideologies of best practice, promoting document intensive processes or privileging specific modelling languages. In both fields there has been a gradual move away from plan driven work processes to more flexible work

methods. This is presently experienced as a growing tolerance for "lighter" work methods and agile methods which was lacking in the early 1990s.

The **project management research** field is engaged in similar games and is played by adopting specific research methods, being selective with issues of concern or privileging the existence of phenomenal domains and institutions. The **project mandate field** offers a context for other competitive games. This field is likely to offer capital for ideas and practices that discharge the project mandate in the most effective manner. The **temporary organisation field** will offer a hierarchy and will therefore provide a context for games in which project participants can aspire for higher ranking positions.

The ***das Man* field** offers a context for adhering to generally accepted public roles with related norms to judge correctness. To an extent the structure of this field can also be detected in each of the other fields described above. This field is still defined explicitly because there are bound to be general pools of public roles that are not specific to IS project management practice but represent the local or national culture of the organisation or project team. As a combined influence, this confluence of fields exerts influence on agents because it offers space for conflict, competition or cooperation for forms of social *capital* recognised within the *field*. All these fields offer *Dasein* various options to take a stand on its being. *Dasein* internalises the structure of the fields that settle into the background as an overall context of significance and these affordance show up as solicitation to allow *Dasein* to take a stand on its *being*.

The affordances presented by the various fields fall into the general background and, depending on *Dasein's* level of competence, a specific set of related affordances will be presented. Figure 6 also highlights that practices are enacted, implying that the

agent response is conditioned by an already embodied response to the pre-given situation because the embodied mind anticipates an already known world. Pre-given responses are said to be a result of embodied cognitive responses stored by the nervous system. These cognitive structures are created and re-created in an infinite cycle as practices are enacted. This explanation underpins the claim by Maturana & Varela (1980) that there is no difference between doing and knowing, and knowing and doing. The cognitive structures store experiences using a system of concepts, analogies and metaphors to classify them. Through these classifications human beings are able to conjure up a range of cognitive responses, which in turn trigger a range of bodily responses stored as cognitive structures (Varela *et al.*, 1993; Llewelyn, 2003; Raelin, 2007).

At the initial stages of learning and practice, the relation between mental intention and bodily action is quite underdeveloped. One may know what to do mentally, but may be unable to physically execute the intention. As one practices, the connection between intention and action eventually disappears as they merge into one state. This state of en-action can be described as neither mental, nor physical but a specific kind of mind-body unity (Varela *et al.*, 1993, p. 19). It is thus possible to classify tacit knowledge using concepts, analogies and metaphors to negotiate experiences, thus allowing these responses to be stored and referred to as states of the nervous system which can be invoked.

4.14 Conclusion

This chapter presented a regional ontology which is proposed as a frame which gives the essence of Information Systems project practice. The regional ontology takes into consideration that knowledge is the result of an ongoing interpretation that emerges from our capacities of understanding, which are rooted in our biological

embodiment but are lived and experienced in a shared cultural context. This is a departure from the tendencies of modernism to a more post-modern characterisation. This regional ontology is intended to allow researchers and practitioners to engage more meaningfully about problems with practice and thereby allow for future development of IS project practice. This regional ontology is developed to allow observation and therefore make assumptions about the knowledge the observer can acquire and the assumptions which underpin these observations.

The next chapter is devoted to giving a characterisation of the IS project phenomenon and accompanying management process that is fitting with the regional ontology. The next chapter will also check how the recent research in the extant literature compares with the proposed regional ontology.

Chapter 5 Interpreting the Regional Ontology

5.1 Introduction

Among the caveats of professionalising management has been the need to compartmentalise subject matter into appropriate categories that give rise to separate conceptual bases which reflect separate practices (Raelin, 2007, p. 498). In a similar manner IS projects have become compartmentalised into the areas of : People, Product, Process and Technology issues ((Steve McConnell, 1996) cited in Nelson, 2007, p. 70). While this has been a manner of accommodating complexity, segregating duties and focussing research, compartmentalisation has led to practices which have been progressively rationalised and are now inconsistent with the manner in which human beings encounter and interact with the IS project phenomenon. There are thus numerous calls for efforts to discover a more realistic underlying theory.

A primary aim of this chapter is to give a characterisation of the IS project phenomenon together with a contemporary management process that is congruent with the regional ontology principles. The regional ontology developed through chapters 3 and 4 will be explained in greater detail using this context of the IS project and management phenomenon. The researcher will argue that the proposal put forward gives a more plausible account of the IS project phenomenon. A discussion about the confluence of the areas of IS product definition, management and methodological processes, leadership, innovation and learning will be provided using concepts from Heidegger, Bourdieu and Maturana and Varela.

A secondary aim of this chapter is to show how the regional ontology compares with other emerging frames that present alternative perspectives of the project phenomenon and the accompanying management practice. This aim will be achieved by explaining and describing the inter-textual coherence between the

regional ontology and the alternative frames that are emerging to describe the essence of IS project practice. Through this process coherence amongst the many newer perspectives may emerge; the assertion being pursued is that the regional ontology provides a wider and more fundamental context that encompasses the newer frames that have emerged. While this is one expectation, it can also be expected that some newer frames may not be compatible with the regional ontology. These are the envisaged outcomes for this chapter. These two aims are achieved over two separate sections. Through these demonstrations the validity of the regional ontology will be probed.

5.2 The Knowledge Creation Paradigm Espoused by the Regional Ontology

This chapter depends on an intimate understanding of the regional ontology and therefore starts by recapping and building on the description provided in chapters 2 and 3. *Dasein* is used in the following sections to refer to the project team, project manager or project team member. The context of *Dasein's* use will infer which of the roles apply individually or collectively.

5.2.1 The assumptions of the proposed regional ontology

The regional ontology and the researcher's relationship with this *unity* are given in Figure 7. The basic structure of the model is derived from social construction between agents and structure. Heidegger's theory of *Dasein* and related concepts were used to characterise the agent. Bourdieu's concepts of *field* is used to structure the related contemporary influences that bear influence on IS activities. These influences constitute a common background influence that determines intelligibility by presenting affordances to IS project practitioners, managers and researchers.

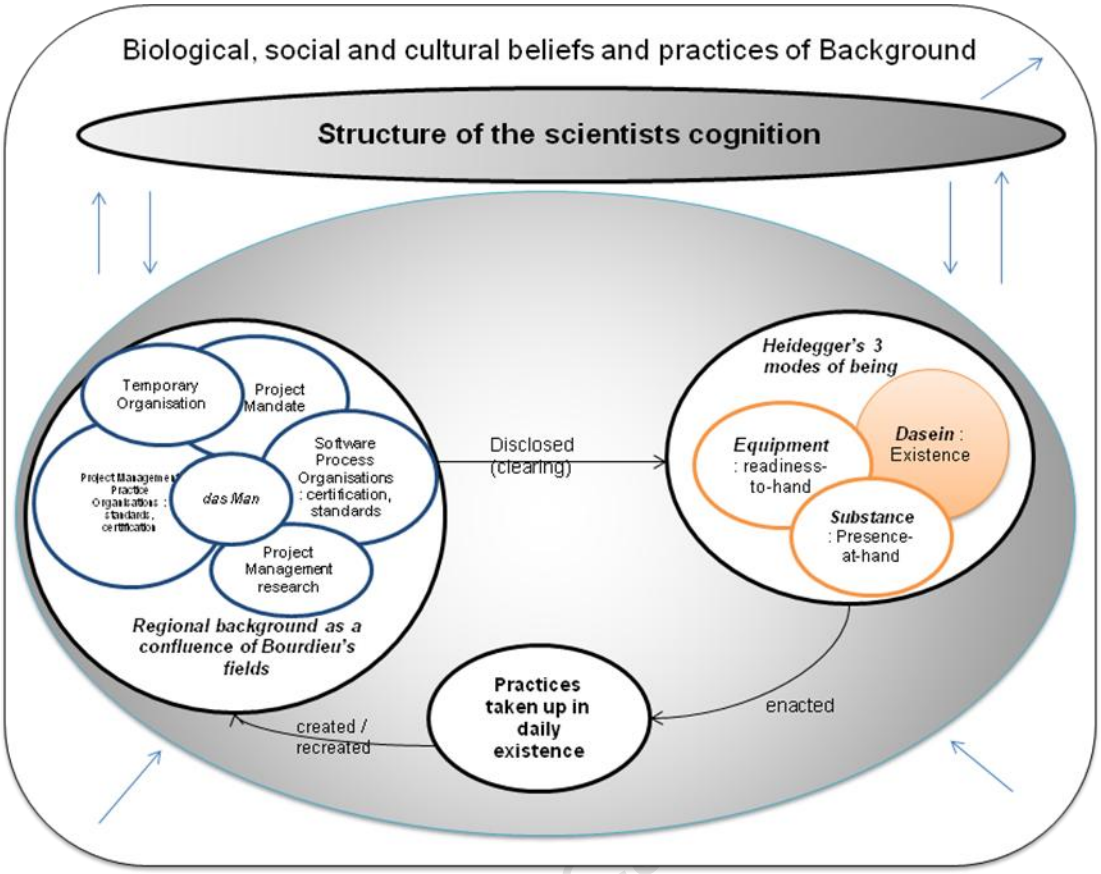

Figure 7: Theorising activity of a supposedly embodied researcher

The regional ontology in figure 7 indicates that human beings undergo continuous intrinsic action throughout their existence because they are concerned about what their lives are amounting to and therefore take a stand on their being by taking up practices that show up as affordances. This is an endless process and the regional ontology can therefore be described using the characteristic of *becoming* which implies that on an ongoing basis *Dasein* is drawn to the affordances presented by the background. According to Heidegger this is a never ending process until death. Such intrinsic action can be ordered and channelled towards an end by generalising and institutionalising particular cognitive representations. In the contemporary research literature this is understood as the background effect of culture. The background cultural effect is shown in figure 7 by the effects of *fields* that exert influence on actors to take up certain practices. In the context of an IS project the

background influence for IS project practitioners, managers or researchers is likely to be the project mandate, the temporary organisation structure, the practices that the discipline recognises as management processes and the methodological processes. The practice of projects as defined by the PMI is one such institutionalised cognitive representation. Similarly, the unified process (UP), Capability Maturity Model Integration (CMMI), agile manifesto, etc., are other forms of institutionalised cognitive representations.

These representations serve to standardise actor beliefs and habits by promoting the benefits of organising and acting in specific ways. Typically, *Dasein* gets socialised into these by familiarity, through certification programs, education programs and work experiences. Usually, these benefits are promoted by the level of stability, routine and order that can result from organising and working in a particular way. A number of these institutional representations also promote various views which claim to illuminate phenomena to facilitate consequent actions. The UML is one such representation which purports to show the functionality and features of the IS product from a number of perspectives. Similarly, the work break-down structure is a project management construct that affords subsequent planning, control and monitoring. Actors, over time, become socialised into these practices and enact practices that are afforded by these various cognitive representations to guide their interaction in such domains.

Figure 7 shows how *Dasein's* socialised condition is expressed by the affordances in the background, which evolve continuously as a result of ongoing daily enaction. Nodes of significance are added to the interconnected background as a result of *Dasein's* situated experiences. Through daily coping the background (collection of fields) becomes richer as more nodes of signification are added to it, allowing *Dasein* to move from being drawn into the affordances to being able to project into

possibilities in various contexts. All new nodes of signification finally retreat into the general background. *Dasein* competence thus varies depending on the extent to which the background is enriched. Cicmil et *al.* (2006) and Cockburn (2002a) give differentiation theories of categories to define project manager and IS project practitioner transcendence or competence aggregation.

Based on the regional ontology, the following principles which relate to IS projects can be inferred:

a) The project mandate which includes the objectives and parameters is a phenomenal or conceptual domain that has to be acquired by project participants.
b) An IS project therefore emerges.
c) Team coherency, synergy and co-operation are directly influenced by the pace and extent to which the phenomenal domain is absorbed into the background and reflected as affordances.
d) The acquisition of the project mandate as phenomenal domain depends on the structure of *Dasein's* nervous system and may require dislodging other concepts.
e) Due to *Dasein's thrownness* the project mandate remains delicate and contested.
f) One of the ways in which new innovation results in an IS project is when *Dasein* makes connections with other phenomenal domains that are part of the structure of *Dasein's* nervous system.
g) The nature of the IS project results accrues from and depends on the success and rate of *Dasein's* learning.

These principles are expanded with contextual descriptions in the following section.

5.2.2 A possible outline of an IS project process

The remainder of this chapter depends on a contemporary characterisation of the IS project management process and the IS project phenomenon that is fitting with the regional ontology principles. It is important to emphasise that the articulation given below is just one contemporary formulation. Other formulations do therefore exist. The ideas presented are a cumulative result of the literature review conducted in chapter 2, the researcher's prior experience of these projects and the exercise undertaken to develop the regional ontology. Along with the theoretical constructs of the regional ontology the following research contributions can be highlighted as being distinct influences on the IS project characterisation given: Packendorff (1995), Cockburn (2002a), Hodgson & Cicmil (2006a), Thomas (2006), Cooke-Davies *et al.*(2007), Raelin (2007), Stacey (2007), Reich *et al.* (2008), Tsoukas & Chia (2002), Linehan & Kavanagh (2006), Söderholm (2008) and Walker *et al.* (2008a; Walker *et al.*, 2008b).

IS project expectations emerge dialectically as users and the project team engage with the problematical situation of concern. As users narrate their desires, problems and opportunities, project team members are able to understand aspects of the required system. This understanding is acquired as a phenomenal domain and connections are made with other phenomenal domains practitioners may have. Through the means of discussion and demonstration the sponsors and stakeholders are able to confirm, clarify and raise new expectations. In iterative learning processes these needs and solutions can be coherently worked out as possible implementation paths. Due to *thrownness* there is always a chance that the process can meander too far from immediate concerns; therefore, both the sponsor and project management team have to check the activities on an ongoing basis to see if the overall project purpose remains feasible. During the formative stages of projects

the project destiny and mandate remain fragile and contested. The project team can use a range of artefacts that the participants have been socialised into to debate and discuss the information system under specification, design and construction. Some of the artefacts may need to be revised, refined and maintained to serve as system documentation for design intentions or to record decisions. Depending on the team size, skill variances, physical distribution and culture, the artefacts will vary in type, number and importance. As the project progresses, deliverables should become more concrete and reflect the growing understanding of the desired information systems. As a result of this maturity, activities and inter-relationships amongst team members will become more coherent. Throughout this process it is likely that new intentions are formed by all project personnel. These may result in the project manager, project team and stakeholders influencing each other's expectations in terms of the project deliverables or parameters of delivery. These influences can happen delicately and perhaps unconsciously as relationships mature and get more efficient. The influences play themselves out as cultivated sensitivity toward aspects of the project and bear influence on decisions and actions. These influences can also be more direct and explicit. The project thus generates further expectation on an ongoing basis and these are typically accommodated as enhancements and futures projects or remain as oppressive influential expectations.

This conception of a project can be viewed as a set of interdependent activities and defined as phases with a corresponding set of artefacts which need to be constructed, as has been traditionally done. On the other hand, as is being suggested here and by a number of other researchers, the project can be seen as an emergent process of human relating that targets specific intentions which may have resulting artefacts (Cockburn, 2002a; Cooke-Davies *et al.*, 2007; Stacey, 2007).

5.2.3 A possible outline for a project management process

An accompanying management process is given in this section because at this point IS projects are managed by project managers. An information systems project is typically driven by a project manager that coordinates and designs an emergent set of activities on an ongoing basis to allow team members individually and collectively to learn new knowledge, transfer their knowledge to others, and create new shared understandings that are reflected in interim artefacts, implemented parts of the information systems solution, as well as the project expectations all project participants formulate. All activities are normally undertaken within predefined parameters of expectation. Although the project and activities are given definition initially, they remain contested throughout the process because *Dasein* learns and copes. These parameters can include contemporary measures such as time, cost, scope and quality.

A project process normally starts out with a team becoming aware and sensitised to specific objectives, concerns and expectations that may be given with constraints of time, cost, scope and quality. Through agreement stakeholders and a project team choose to undertake a specific project mandate under the leadership of a project manager. Using the initial needs the project manager and team propose an appropriate course of action by adopting a methodological process that gives shape to the form of project activity that *Dasein* feels is relevant for the project task at hand and the team's profile. While considering the process to be followed and the needs that have to be met, the project manager and team must develop forecasts to identify future resources, time-lines and budget requirements. When the project is launched it can be expected that a number of disparate processes of formal and informal activity will emerge. The project manager therefore must put in place processes to

ensure that vision remains congruent and feasible amongst team members. Such processes will need monitoring and perhaps adjustment on an ongoing basis. As the project activities are undertaken, the project manager must provide day-to-day direction to the project team as well as provide regular project status to the sponsor and stakeholders to ensure the project is aiming to deliver objectives that are relevant and acceptable. These activities can be conducted as project team meetings, progress reports, published minutes and tactful, *ad-hoc* encounters. While the project activities are underway all project resources must be accounted for. Generally, the project manager has overall performance responsibility for managing scope, cost, schedule and contractual deliverables. Depending on the size of the project, a project information system may need to be put in place to provide information to monitor parameters along contemporary measures such as burn rates, earned value, etc.

The description provided is a normative rational account of a "happy day scenario". It is, however, only given as a conceptual account of the activity and does not prescribe any specific "thou-shalt" practices. The discussion of the regional ontology principles in the next section depends on this context.

5.2.4 Our being in the world does not match modernist ideals of knowledge creation

The role of best practices in the development of novice project managers remains contentious. Hodgson & Cicmil (2006a), Cicmil *et al.* (2006), Walker *et al.* (2008a; Walker *et al.*, 2008b) and others advise that a best practice focus can affect future transcendence. While this provides clarification, a wider context to appreciate the overall shape best practices should take is necessary. In the pursuit of further

clarification it is important to note that *Dasein* cannot escape the language and culture that *Dasein* has become socialised into and therefore cannot retreat from the daily affordances to seek and adapt to any universal truths. *Dasein* copes and learns in a world by adopting cultural practices that show up as affordances. *Dasein* can move away from being drawn into these affordances to being able to circumspectly project into possibilities as *Dasein* masters competence in a particular domain. *Dasein* is, however, unable to retreat from this *thrownness* to transcend language and cultural immersion.

Dasein's general demeanour is absorbed coping, and *Dasein* can momentarily step back to reflect and theorise on aspects of the background. Being reflective is, however, not a permanent state of *Dasein* in the world. A person's ability to be conscious of being amongst others in the world is not always *ready-to-hand* because *Dasein* is not a subject, but a clearing that discloses the "being" of a person. A person cannot choose moments to be in the world, subjected to the worldly influences, and moments to avoid these. *Worldliness* pervades all relationships and interactions with objects and other beings *in-the-world*. The practical affairs of everydayness are thus not constraints that limit *Dasein's* ability to be careful but are the primary manner of existing for *Dasein.* Anything showing up as an affordance shows up only because it can contribute to *Dasein's* practical needs and purpose.

The modernist ideals of universal theories are therefore not congruent with existence. A post-modern set of ideals are more applicable because of *Dasein's* daily coping. Post-modern beliefs espouse that theories are organically embedded in our culture and therefore conditioned by our point-of-view. The regional ontology advocates that action is perceptually guided and often enacted unconsciously. The cognitive theories of Maturana and Varela were used to show that the nervous system stores phenomenal responses that allow *Dasein* to anticipate a pregiven world. As beings

learn, their nervous systems expand to increase the range of states with which an organism can mediate its environment. The range of responses an organism is capable of becomes embodied as particular patterns of nervous system activity. *Dasein's* actions therefore become conditioned to its environment over time to allow *Dasein* to mediate the environment with stored nervous systems responses.

5.2.5 Reflective practitioners

Human beings are therefore historically conditioned to provide responses they have become socialised into and cannot step back from these and rationally alter them. Although human beings are historically conditioned they can change the agency to adopt new perspectives in the future in a limited way. It is thus unreasonable to expect normative instrumental expectations to materialise. Instead of slavish adherence to particular modes of thought or preconceived criteria preconditioned as responses, practitioners need a large repertoire of cognitive frames to reframe problems and discriminate between frames in various contexts. Put simply, practitioners need to develop their cognitive ability to make sense of their own practice. This can result from concurrent reflection on practice to build competence and discourse, thereby shaping the background on an ongoing basis.

The terms reflection-in-action, reflection and reflexion are used to refer to circuitous revisiting of the self to understand what a practitioner has done to contribute to an expected or unexpected outcome, taking into account the context as well as the interplay between theory and practice (Raelin, 2007; Sewchurran, 2008; Walker *et al.*, 2008b). The phenomenology of this process is given next.

5.2.6 Phenomenology of reflection

The world *Dasein* is immersed in is disclosed as a result of breakdown or *Dasein* taking notice of an aspect of affordance. During moments of *disclosure Dasein* becomes aware of the existence amongst others, equipment and objects in a particular context. In *disclosure Dasein* is always affected in some way or another. Affectedness (*so-foundness*) is typically indicated through moods: aggressive culture of a corporation, uncooperative users, demanding sponsors, unreasonable deadlines, difficult confrontation, etc. *So-foundness* is articulated (*telling*) by *Dasein* to render the current situation coherent and visible. This leads to *Dasein* being dragged out of absorption to make an assertion or predication. Assertion results in a narrowing of the context by dimming the rest of the background. Assertion or predication either articulates a general or a situated property of the phenomenon. During assertion the object is temporarily delineated from the background. A situated property comes from *Dasein's* context of involvement while a general property relates to the object. A situational property could be that users in a specific project are more cooperative when they use ordinary language from their domain of involvement, while a general property could be that a business case is an artefact that results from the process of project definition.

Through such assertions, pre-conceptual, tacit experiences are conceptualised and made concrete. Concrete understanding results in enriching the inter-connected context (background) with further understanding, for example, an object with properties or affordances *for-the-sake-of-which*. As a result of such learning, in future interaction *Dasein* is able to display "*fore-having*", that is, being confronted with a familiar background which is experienced as a network of solicitations. At times *Dasein* may display "*fore-sight*", that is, the ability to circumspectly pick up an aspect of familiarity or affordance to focus on, allowing *Dasein* to have "*fore-grasp"* of

something within the totality of the chain of assignments. Ultimately, this allows *Dasein* to transcend from being drawn into these affordances to circumspectly choose affordances in a specific context. Cicmil *et al.* (2006) refer to this as the *proficient* and *competent* performer stages. As *Dasein* undertakes these practices the newer nodes of signification fall into the background. This mode of understanding is unreflective, not noticed and is described as the expert stage in the model by Cicmil *et al.* (2006).

5.2.7 Use language as an end not just a means of transference from one mind to another

Throughout an individual's history, in moments similar to reflection, recurrent experiences become classified within the nervous system as distinct states using a system of concepts, analogies and metaphors. Through these states of consciousness human beings are able to conjure up a range of nervous system responses, which in turn can trigger a range of stored bodily responses (Varela *et al.*, 1993; Llewelyn, 2003; Raelin, 2007). Language and theories therefore serve a practical purpose in daily interaction, because through language *Dasein's* world is disclosed and made coherent. Because language is the only means by which the consciousness can be accessed, it influences the direction and extent of connections that can result from learning and coping. Thus, when acquiring new knowledge the grounding metaphor can play a crucial role in initiating the conceptual framework. Consider the grounding metaphors of a project process as *becoming* and emergent, and a project as a predetermined set of activities that needs to be monitored and controlled. The expectations that emerge from these analogies are vastly different. Expectations from the latter analogy are likely to be instrumental, while expectations from the former are likely to be expectations of learning. Learning is thus influenced by the ease with which these new concepts can be assimilated by the nervous

system given the constraints of existing nervous system structure. Alternatively, learning may need to dislodge conceptual phenomena already embedded in the nervous system (Llewelyn, 2003, pp. 664-668). Moreover, Varela, Thompson, & Rosch (1993, pp. 176-178) claim that categorisation of the nervous system appears to come from the structured nature of bodily and social experiences. As another example, consider the use of language as a means to denote or as a means to change perspective and craft the acquisition of a discourse. These examples make it seem quite likely therefore that a project is a language game like Linehan & Kavanagh argue (2006). Thus language can trigger and gives rise to quite different sets of expectation which show up as affordances.

5.2.8 Summarising the implications for best practice based education

From the above discussion it can be deduced that the ideology of slavishly enacting best practice is not suited to the project phenomenon, nor is it suited to *Dasein's* daily coping, because it impedes the processes of ongoing sense making and learning that are necessary to cope with IS project phenomena. Moreover, learning and coping is *Dasein's* way of *being-in-the-world.* Two points of clarification can be made to further delimit the role of best practice. Firstly, some focus on best practice is necessary to establish a base of skill for the novice to encounter the *for-the-sake-of-which* or *in-order-to*. Secondly and crucially, a lack of awareness of the transcendence and a wider context will leave practitioners in "permanent" breakdown mode, because of the belief that tools and techniques are the major part of the skill that is necessary for them to acquire and apply. To summarise, a case is being made here for practitioners to avoid starting out with rational instrumental approaches because this limits learning and the development of competence. Best practices can be included

in a discourse but within a broader analogical basis that is congruent with *Dasein's being-in-the-world, s*uch as *becoming*, learning, emerging, etc.

Conforming rigidly to forms of best practice is therefore more dependent on the purpose being pursued and is not the natural manner in which *Dasein* can be expected to appropriate equipment. The ideology that it is possible to rigidly apply and conform to best practice is misplaced because as soon as pursuit of a wider purpose emerges, equipment use will withdraw and recede into the *background*. As Heidegger's thesis illustrates, our *being-in-the-world* is in direct contrast to the assumptions of normative, instrumental, rational and objectivist behaviour. As a result chapter 2 reports that practitioners are finding that prescribed practices do not correlate well with the actual experience on IS projects.

As a final remark, this discussion demonstrates that it is unreasonable and oppressive for practitioners to see their roles as applicators of the best practice that is *present-at-hand.*

5.3 Comparing the Regional Ontology with Popular Alternative Theories

Thus far the regional ontology has been used to portray the characteristics of the IS project phenomenon. The discussion has been in accordance with the views expressed in the alternative theories that have emerged to reflect the project phenomenon. These perspectives are discussed further in this section: the theory of complex responsive processes of relating, the temporary organisation focus and agile development practices.

5.3.1 Complex responsive processes of relating

Thus far, this chapter has argued, based on the concepts of the regional ontology, that organisation and knowledge are emergent properties of the essential human behaviour of communicating. Cooke-Davies *et al.* (2007) and Stacey (2007) argue similarly using the concept of complex responsive processes of relating as a frame to view project management practice. According to this theory the phenomena to be studied is human relating. Both the theory of complex responsive processes of relating and the regional ontology claim that human action and interaction perpetually reproduce individual and group identity. In a circular process, as a result of interaction, identities are formed and reformed by narrative and propositional assertions. In the complex responsive processes of relating frame, project settings are essentially patterns of interaction between people which takes place in a variety of ways which includes: language, artefacts and other forms of non-verbal communication. This perspective is in accordance with the regional ontology, because in communication, individuals simultaneously enable and constrain each other. Cooke-Davies *et al.* (2007, p. 58) assert that communication is therefore always about power relating.

The complex responsive processes of relating frame implies that projects are complex social processes which have structural properties which actors draw on in their interactions. Thus interactions get cloaked with typified behaviour implied by forms of normative public roles (*das Man*) of the generalised other. Cooke-Davies *et al.* (2007) assert that practitioners require the ability to participate in these complex processes of conversational power relating. One such ability they and others define is reflexivity, which implies gaining an understanding of one's own complex processes of power relating with others and the wider structures. In addition to reflexivity, they advise that practitioners need to cope with the anxiety that comes

from knowing and not knowing what to do next, and simultaneously being and not being in control (Cooke-Davies *et al.*, 2007, p. 59).

The experience of being together as a project organisation is brought about by the patterns of communicative interaction and figurations of power relations that emerge and re-emerge in processes of inter-relating (Stacey, 2007, p. 300). Thus, a project organisation, according to Stacey (2007), is nothing more than a temporal process of human relating in which the project team members continually review their futures together by actions in the present.

To substantiate the theory of complex responsive processes of relating, Stacey (2007) uses the works of Herbert Mead and Norbert Elias (Stacey, 2007). George Herbert Mead (1934) states that consciousness results from communicative interactions between human bodies (cited in Stacey, 2007, p. 299). Consciousness is also said to be the result of reflection when people engage with themselves (Maturana & Varela, 1998). Consciousness therefore does not necessarily emerge only from communication.

Drawing on the works of Norbert Elias, Stacey points out that communication is not simply the sending of a signal but is transformative (cited in Stacey, 2007, p. 299). Stacey also draws on Hegel's work and points out that interaction of human interdependence also gives rise to the sense of self because the self emerges in social process with others, either through mutual recognition of the self or in conflict (Stacey, 2007, p. 294). Due to *thrownness* it can be said that

> *Nobody can regulate the movement of the whole unless a great part of them are able to understand, see, as it were, the whole pattern that they form together….((Elias, 1978, p.9) cited in Stacey, 2007, p. 295)*.

Because all human beings are inter-related and are forming intentions, making choices of next actions that affect each other, no one can control the consequences of inter-related activity with certainty. The consequences emerge in the interplay of all intentions and actions, and these generate ongoing further consequences, in a process that has no beginning or end (Stacey, 2007, p. 297).

The theory of complex responsive processes of relating provides more fundamental explanations for some of the findings in chapter 2. Take the claim by Sewchurran & Barron (2008) that IS project success depends on ongoing dialectical engagement between the project sponsor, project stakeholders and project manager. The theory espoused by complex responsive processes of relating provides grounding for this claim by explaining what is meant by "dialectic engagement" in an alternative and more accessible way. It is thus possible to infer what is going on in the processes of engagement. Similarly, the claim that the project goals in organisational project-driven initiatives need to be kept open and tied to wider organisational goals to allow for innovation and learning that opportunistically festers in these project settings (Kautz *et al.*, 2008b; Osei-Bryson *et al.*, 2008). The complex responsive processes of relating also explains Cockburn's (2002a) theory of transcendence which states that once there are touch points of shared experiences communication is enhanced and participants can work from mere gestures.

While the theory of complex responsive processes of relating provides an accessible theory to explain the complexity in interrelating and organisation, the regional ontology has the potential to deepen this theory. Consider the claim that in interactions participants assume the identity of the generalised other. Heidegger's concept of *das Man* can provide a wider context to appreciate how the generalised other is formed. The concepts of *thrownness, clearing* and the ways of *being* provide

a more rigorous characterisation of daily existence than the theory of complex responsive processes of relating. Complex responsive processes of relating is, however, a proxy for Heidegger's more fundamental concepts and has value in that it provides an accessible description of mundane existence as human inter-relating. The theory of autopoiesis which is used to galvanise the composite concepts of the regional ontology also offers an alternative perspective on how learning in these contexts occurs to lead to patterns of communication being developed. Complex responsive processes of relating is a conceptual theory that complements and is complemented by the proposed regional ontology.

5.3.2 Temporary organisation focus

The temporary organisation metaphor has become a popular way of broadening the perspective from which IS projects can be considered (Packendorff, 1995; Söderlund, 2004; Bredillet, 2008; Söderholm, 2008). Organisation, however, as has been illustrated, emerges from patterned themes of communication and interdependence, and is therefore an emergent concept that arises from the basis of complex responsive processes of relating. Although this may seem like organising is a secondary concept which in ontological precedence comes after complex responsive processes of relating. It can be extremely valuable to look at the temporary organisation as the confluence of the various fields which attempt to institutionalise a specific cognitive representation of the project to cause practitioners to adopt specific practices and values. The temporary organisation can be used to draw attention to the particular blend of ordered and institutionalised cognitive representations. Such a view of projects as temporary organisations instead of tools enables Packendorff's (1995, p. 326) vision to research projects in terms of culture, concepts, relations to the environment, etc.

Notwithstanding the value of this view, the adoption of this perspective must be approached with caution to avoid this ontological direction mutating from a *becoming* ontology to a *being* ontology that serves to inspire only instrumental ambitions. Tsoukas & Chia (2002, p. 567) illustrate how the study of organisation change has become dominated by assumptions which privilege stability, routine and order because the contemporary view of an organisation illustrates that organisations are static, and change is an exception rather than an ongoing activity. Change is thus thought of as a property of organisation, rather than organising being an emergent property of change, resulting as the differences between actors is reduced to produce recurring behaviour. The regional ontology argues for a becoming ontology like Tsoukas & Chia (2002, p. 567) argue for a view of organisational *becoming.* They claim that organisations are sites of continuously evolving human action where organisation or change is achieved by reweaving actor beliefs and habits to accommodate new experiences obtained through interaction. Moreover, as soon as concepts are used to bulk experience in organisations, organising is reduced to a series of static intermittent positions. The PMBOK process is a good example of this. The PMBOK guide presents five process groups: project initiation, project planning, project execution, project monitoring and control and project closure. These processes constitute the life cycle of a project. The waterfall model is another example. As with all concepts through application over time they become a normative act insofar as it presupposes background knowledge that is value laden. Thus, the temporary organisation analogy is useful, but it can result in the view of organising as emergent being replaced by a view of organising as a series of concrete phases or steps.

5.3.3 Agile development practices

By taking an emergent view of projects, as is espoused by a becoming ontology, a project is firstly a language and secondly a practice (Linehan & Kavanagh, 2006, p. 55). The PMI has instituted a specific language for projects using the same rationale as other organisational dialects such as accounting, quality, sales, etc. The OMG's effort can be considered similarly. A *being* ontology benefits from a common lexicon because its focus is on a pre-existing discrete phenomenon. A *becoming* ontology, on the other hand, stands to be constrained by the rigidity of a specific lexicon that does not cater for ambiguity which IS projects are known to experience, especially in the earlier phases. The regional ontology argues that IS projects are an emergent outcome and the various strands of agility try to achieve such an outcome by being open to change, preferring face-to-face interaction amongst individuals and ongoing customer collaboration. All these values encourage engagement and learning among participants because there is appreciation that language is a constructor of meaning and realities instead of providing a means to represent and denote. Although a lexicon like the UML exists, the phenomenal domain that represents an information system from various perspectives is often not there for labelling using these constructs. A more feasible expectation has been given stating that the phenomenal domain emerges as *Dasein* acquires this as a unity. The regional ontology provides an account of how language is the only means by which consciousness can be accessed. Further, the regional ontology also illustrates how accessing the consciousness allows individuals to make connections to other phenomenal domains that the participant identifies with. Through this process explicit learning and appreciation results allowing the phenomenal domain to emerge as understanding is acquired and made explicit as participants engage. Often, this step of the process is underestimated. Chapter 2 iterated the importance of learning several times. Notwithstanding the importance of learning, studies find that learning

often results coincidentally and opportunistically. A similar situation exists with the PMBOK lexicon. There is an assumption that a process can be instrumentally applied to label the phenomenal domain to give a project direction. The regional ontology therefore provides rationalisation for the engagement in agile practices. Instead of apologetically accepting that agile practice is performed in such an *ad-hoc*, unscientific manner, the regional ontology clarifies that agile practice is dealing with the phenomena of complex responsive processes of relating.

5.4 Regional Ontology Implications for Education

All practices *Dasein* gets socialised into are cloaked with significance in terms of how they contribute to the stand each *Dasein* takes on its being. This happens continuously until death. Thus public forms of social practices undergo peculiar adjustments to express each *Dasein's for-the-sake-of-which*. Over time as more experience is acquired *Dasein* becomes unconsciously competent in its practices. Through such embodiment an already known world comes to be expected in interaction and *Dasein* develops a pre-reflective sense or grasp *(fore-having, fore-grasp and fore-sight)* of its environment. Dasein thus also brings to bear habituated responses as actions and perceptions. The underlying assumptions that underpin these practices become less apparent over time as they become encapsulated in more encompassing purposes (*for-the-sake-of-which*) and fall into the background. There is therefore a great chance that these expectations will get out of synch with the public discourse because these are changing all the time. Dasein therefore needs to be educated about this basic characterisation of *being* before it acquires knowledge of IS project practices.

As a result of the nature of *Dasein* there is always a chance that it can become the subject of a controlling or oppressive discourse, that is, *Dasein* can become set in

expectations that prevent learning, understanding and innovation. Consequently, *Dasein* needs to become socialised into an appropriate *for-the-sake-of-which* that provokes break-down to take notice, reflect, learn and enrich the background. This reparation is essential to avoid slavish adherence to practices, and also essential to allow *Dasein* to enrich practices with the more fundamental effects of human relating and language. In interaction *Dasein* is drawn to act as one does (*das Man*) and enacts the practices that *Dasein* becomes socialised into. When *Dasein* acquires familiarity it is not necessarily doing this in a reflective manner and the more fundamental effects of the practice are therefore not apparent. Accordingly project management education has to have sufficient theoretical depth to allow enquiry into the more fundamental effects that arise from human relating and language. Moreover educational programs need to establish and reaffirm the theoretical depth using various combinations of mid-range theories that are complementary and accord with the principles of the regional ontology. The theories must also be aligned with the intentions of the program and the abilities of the students. The mid range theories are meant to allow *Dasein* to bring forth a phenomenal world to interact with. Likewise the educational discourse should equip *Dasein* with ability and confidence to analyse, design and implement an emergent set of activities for a team of people to strive toward a common goal which they may have different interests in.

5.4.1 A contemporary discourse

In accordance with these principles of the regional ontology the researcher makes the following recommendations for a possible program that can be used to train novice and graduate IS project professionals. This claim is being made without any empirical evidence. The researcher, however, believes the following is a more fundamental framework for IS project management education than his previous

contribution which has had reasonable success in imparting a discourse that students feel is more congruent with as-lived experiences (Sewchurran, 2008). Having made this statement, it has to be reiterated that this is just one formulation to undertake the development of IS project management capability amongst IS project managers and practitioners. The regional ontology has provided clarification on the potential role of best practices. To recap, the discussion concluded that best practices should only be taught within a wider analogical schema. In the light of this conclusion the researcher disagrees with the suggestion that best practice formulations such as PMBOK should make up most of the novice's early discourse. The main point of contention the researcher wishes to emphasise is that a broader analogical schema that encompasses *enaction*, learning and *becoming* needs to be acquired prior to any best practice.

To allow for this to happen the researcher contends that it is possible to develop an understanding of situated action using concepts, analogies and metaphors to negotiate general experiences that may be class room based or staged project settings. A primary manner of engaging students therefore needs to get them to reflect to ground tacit experiences with relevant concepts to acquire a phenomenal domain that will show up as affordances in practice. The primary experiences that need to be grounded with relevant theories are an understanding of the potency of communication, interpersonal relating and the agency of wider social structures. The knowledge of best practices should be regarded as just particular ways of undertaking project management practices. The challenge in the education of project practitioners is to thus craft exercises to impart relevant concepts, develop exercises to give students specific forms of experience and to tactfully design reflection at specific points to harness fusing experience with relevant concepts. This prudence is needed because each acquired concept should facilitate the acquisition of further phenomenal domains. The following sections take these ideas further.

5.4.2 Establishing the purpose of Project Management practice

The very first goal in imparting an initial discourse is to get students to appreciate what an IS project phenomenon is, how popular the discipline is and what the practice typically entails. Once this *for-the-sake-of-which* is bedded down, the students must be given an introduction to the primary debates that characterise the field. With this background the type of discourse that practitioners need to acquire can be raised. Together with this, an outline of the curriculum can be provided. Any outline needs to be suitable for the level of students but also be in accordance with principles of the phenomenal domain represented by the regional ontology. At minimum the basic discourse has to establish the following: the phenomenal domains of a typical IS project, principles of contemporary project practice, understanding of existence, the need for life-long learning and embodied cognition. To this basic discourse popular practices such as PMBOK, UP, etc. can be added.

5.4.3 Embracing existence

At the heart of the regional ontology is the structure of daily as-lived coping. This is the broadest basis that needs to be established. Through the effects of modernism understanding of existence has been gradually eroded. The practical affairs of everydayness have come to be seen as constraints that limit the ability of human beings to be objective and focussed. An understanding of daily as-lived existence has to therefore re-establish the character and nature of existence, because it cannot be escaped nor denied as it is the natural manner of existence. Instead of denial existence needs to be embraced. Two concepts can be focussed on to impart an initial understanding of the structure of existence. The most important initial concept is perhaps the *background*. Students need to appreciate that the *background* is gradually acquired and presents a different set of affordances to each human being to take a stand on its being. The concept is deceptively simple and the implication of

this needs pointing out. The discussion perhaps needs to take the format of a number of practical exercises to allow for this phenomenon to settle into their nervous systems.

The second concept that needs to be taught is that all human beings (*Dasein*) take a stand on their existence by taking up practices that accentuate what they stand for. To make this more apparent an exercise can be designed to allow students to articulate a set of approximately five core values that they hold most dearly. To assist with this process students can be guided to use the technique offered by Richardson (2002, pp. 14-19). In addition to articulating core-values, students can be encouraged to write a mission statement. Together these would approximate the student's primordial understanding of *being*. The Covey techniques of articulating a mission statement can also be used to supplement this process (Covey, 2004). To enrich the both these processes students can be encouraged to check for correlation between the core values and mission statement. On completion of these exercises students need to analyse the roles they see themselves undertaking daily to check if these are an expression of their values and mission statement. These exercises are a practical way of preparing students to appreciate how they are taking a stand on their *being* all the time by undertaking practices that are public roles that make a meaningful contribution to the being that they are intending to be. It can also be pointed out that values become etched into their minds and bodies since birth and are undergoing evolution all the time and are likely to change. As a set these exercises can be used to give a basic understanding of the structure of existence. As rigorous reading to reaffirm these concepts, chapter 2 (The rationalistic tradition) and chapter 3 (Understanding and Being) from "Understanding Computers and Cognition" by Winograd and Flores (1987) can be used as supplementary readings to enhance class discussions.

5.4.4 Understanding learning and embodied cognition

Once all students have been taken through basic concepts of existence, the concepts of learning and cognition can be discussed. Perhaps a good starting place is to engage with the fallacy that human beings are mostly rational and reflective in interactions. Various examples need to be discussed to emphasise that human action is not always preceded by thinking. Instead, most routine activity is embodied. The discussion needs to be practical. A debate about the alternative models of cognition can be staged. The information processing model and positivist beliefs should be the initial discussion. The students need to be prepared to doubt the common conception that human beings are rational and reflective in their interactions. Once sufficient preparation has been done the alternative of embodied cognition can be discussed.

The alternative cognitive model, enaction, depends almost simultaneously on a number of other concepts and is therefore suggested as the second model. Concepts such as theorising, language, learning and reflection are required almost simultaneously. The phenomenology of reflection can be discussed to put things into perspective. Although it is not essential that students, acquiring an initial discourse need to grasp all the finer details, they should at least develop sufficient sensitivity to understand that language is a constructor of meaning. Students should also appreciate that they are not able to know anything without language. What should be emphasised to students it that existence and consciousness cannot transcend the language and culture they are socialised into. A number of opportunities can be pursued at this point and there needs to be some sort of prioritisation depending on what the class needs most.

Once students have been through such a process they are more prepared to accept that the project mandate is a conceptual schema that has to be articulated, refined and extended using mostly language. Students should at this point start to see how all their present understanding is cloaked by prior understanding. Key points that need to be emphasised are the role of theorising in daily existence and the need for theories to bring forth phenomena and the world. Two readings can be encouraged at this point. Chapter 3 (Cognition as a biological phenomenon) by Winograd and Flores (1987) can be used to supplement the rigorous theoretical concepts, while Cockburn's (2002a) concepts of parsing patterns and transcendence can be discussed to begin the orientation toward IS project management.

5.4.5 Human inter-relating and group work

With this background the complexity of interaction and group work is going to be made more appreciable and can be taken further. Stacey's (2007) theory of complex responsive processes of relating can form the basis of the theoretical concepts. Undergraduate students need not have an intimate understanding of the concepts. Students do need to see the effects language has in orienting human beings toward a phenomenal domain. At this stage Checkland's soft systems thinking can be introduced as a conceptual process that is used for learning and coping with complex situations (Checkland, 1999; Checkland & Scholes, 1999).

In addition mid range theories such as Tuckman's (1965) model of the development stages of small group behaviour can be added as a complementary reading to give insight into the process of maturity students are likely to undergo in group settings. The intention is to ground these theories as phenomenal domains that show up as affordances. Similarly the six thinking hats by Edward de Bono (1992) can also be used as a supplementary reading to give students a framework to develop tolerance.

At this point the analogical schema has been set and best practices and tools can be introduced. The students are now prepared to understand what the community considers as best or popular practice to undertake project work while also being able to appreciate the more fundamental effects these processes are likely to have. The students have been primed to see more than the normative acts the best practices prescribe; they also need to be prepared to see their role as the designers of appropriate interventions and processes thus being able to design an emergent set of activities.

5.4.6 Project management process and technical methodology design

Within this analogical schema the students can be taught the core knowledge areas of PMBOK and the process groups together with the templates and related language and concepts. It can be pointed out to the students that best practices need to be seen for their value in having a common practice but care needs to be taken to avoid slavish adherence and being fanatical in the belief that this is the only way. To prepare the students to be prudent in their practice they can be given exercises to understand the phenomena at play in each of the activities prescribed by PMBOK or PRINCE2. A group project must be encouraged to allow for circumspect understanding of project practice to emerge. To reinforce the ideas and maximise learning reflexive learning essays can be included. Research papers that show an application of these concepts can also be given to the students, papers which describe project complexities and the actions that are taken. The paper by Sewchurran & Barron (2008) discusses the use of systems thinking to manage project expectations while the paper by Sewchurran & Petkov (2006) gives an account of the use of systems thinking to engage a project team in a learning process to define the project needs.

Söderholm (2008) highlights that IS project management research is not empirical enough, hence there are not enough intermediate theories. The researcher agrees but feels that the regional ontology can facilitate the identification and development of theories. The approach presented above is one feasible approach to partially impart the theoretical concepts that are in accordance with the regional ontology concepts and principles. The approach outlined above does differ from the suggestion by Walker *et al.* (2008b), who claim that reflection in the novice stage is bound to produce shallow responses. The researcher disagrees with this observation because reflection is an activity that is ongoing and a natural way in which *Dasein* learns to enrich the background. Moreover, reflection can be designed to take place as carefully designed interventions in a range of settings instead of being restricted to just project settings, since what needs to be targeted with reflection is the acquisition of a phenomenal domain that shows up as affordances in all future interactions, not just project settings.

5.5 Conclusion and summary

A primary aim of this chapter was to present a more plausible characterisation of the IS project phenomena, related management and educational processes that are reflective of as-lived experience on IS projects. This was done by giving a contemporary characterisation of the IS project, related management process and a possible outline to impart a discourse that reflects the principles of the regional ontology. The intention was not to present a single or the optimal way of conceiving IS project phenomena. Instead the intent was to give a contemporary characterisation of as-lived IS project management practice. Through this discussion it was illustrated that it is oppressive and not in the interests of competence development to give impressions that IS project management is a rational,

instrumental process. Instead through discussion it emerged that it is far more beneficial to give the impression that IS projects are emergent, sensitive to the effects of interpersonal relating and dependent on language and learning to generate and share knowledge.

The second goal of this chapter was to ascertain the truth of the claim that the proposed regional ontology provides a more fundamental basis for IS project practice than any of the suggestions made thus far by the research community. The discussion in the first section did illustrate that the regional ontology espouses many of the principles promoted by complex responsive processes of relating, the agile initiatives and the temporary organising concept. The second section of the chapter deepened these connections by comparing the emerging new frames explicitly to the regional ontology. In each of the cases the regional ontology was able to provide more fundamental explanations, or point out the limitations in emerging perspectives or situate the theory within a wider context. Generally, the discussion demonstrated that the regional ontology is able to bring about coherence by providing an overarching conceptual schema that allows for the development of a range of substantive theories. Listed in Table 3 is a tabulation of some of the contributions discussed in chapter 2 through chapter 5. The theories listed are those that were used to interpret the regional ontology. The discussion in this chapter was not intended to show all possibilities but to focus on checking relationships to ascertain if more fundamental explanations are possible.

Level	Theory	Relevant examples
1	Metaphor theories as a means to ground experience	• Software development is a game of invention and communication (Cockburn, 2002a) • Communication is transformative • Parsing pattern
2	Differentiation theories	• Follow, detach and transcend • 5 stages of competence development model developed by Cicmil (2006) in the context of PM, but drawing on the more general work of Dreyfus and Dreyfus (2004) and Flyvbjerg (2001).
3	Concept theories as access to a phenomenal world	• Complex responsive processes of relating • *Thrownness, clearing, disclosure, das man* • Temporary organisation • Agile • *Becoming*
4	Theories which focus on describing settings to explaining how practices are organised	• Regional ontology that represents the essence of IS project practice
5	Theorising structures	• Cartesianism, modernity and post-modernism

Table 3: Tabulation of the theories relative to the regional ontology

The core principles of the regional ontology illustrate that IS projects are sites of continuously evolving human action where organisation or change is achieved by reweaving actor beliefs and habits through the institution of particular cognitive representations to encourage new experiences. The experience of being together as a project organisation is therefore brought about by the patterns of communicative interaction and figurations of power relations that emerge and re-emerge in processes of inter-relating (Stacey, 2003; Cooke-Davies *et al.*, 2007).

The regional ontology has put into perspective a number of the research findings discussed in chapter 2. Not all the contributions in chapter 2 were reviewed using the regional ontology, only the major emerging theoretical perspectives. Based on this exercise the researcher believes that the regional ontology provides a more plausible conceptual schema to guide the debate about the teaching, research and practice of IS project management.

Chapter 6 **Conclusion**

The primary aim of this research was to make a contribution toward the establishment of a regional ontology which can be used to understand and develop the practice of IS project management. The previous chapter indicated that this objective has been sufficiently achieved. Consequently, there are a number of new insights and primary principles about the essence of IS project management that have emerged.

a) It is unreasonable and oppressive for practitioners to see their roles as applicators of the best practice that are *present-at-hand, see sections 5.2.4 and 5.2.8*. This assertion is defensible because practitioners are not encouraged or prepared to strive for a more circumspect application that is necessitated by more encompassing *for-the-sake-of-which* that naturally results due to existence. While there are these rational, reflective intentions that are implied by best practice formulations, it is impossible to remain reflective and rational whilst *being-in-the-word* (Hodgson, 2005; Cicmil *et al.*, 2006; Reich *et al.*, 2008; Sewchurran, 2008).

b) Additionally, it is not in the interests of competence development to give impressions that IS project management is a rational, instrumental process. The preoccupation with rational instrumental perceptions of practice will result in insecurity and a possible lack of confidence which will not allow the practitioner to trust intuition and gut-feel to undertake improvisation which is necessary in project work, see sections 5.2.2 and 5.2.4 (Leybourne & Sadler-Smith, 2006; Leybourne, 2007; Sense, 2008).

c) Best practices can be included in a discourse but only within a broader analogical basis that is congruent with the features of *Dasein's being-in-the-world*, such as becoming, learning, emerging, etc. The best practices are comparable to just a thin veil covering the more fundamental effects that result from the effects of human engagement and learning. The analogical basis of *Dasein's* features should give root to practices and processes instead of the best practices giving root to *Dasein's* characteristic features because this distorts and marginalises the opportunities for learning, see sections 5.2.6 and 5.2.8.

d) IS projects are emergent phenomena that are sensitive to the effects of inter-personal relating among project participants and depend on language and learning to generate and share knowledge. See sections 5.2.7 The complexity encountered on IS projects is amplified by the intangible nature of IS phenomena. The overall design of the tasks, artefacts and engagement processes must therefore reflect the difficulties associated with an evolving phenomenal domain and the need to reorient participants on an ongoing basis (Cockburn, 2002a; Sewchurran & Petkov, 2006; Sewchurran, 2008)

e) The project mandate which includes the objectives and parameters is a phenomenal domain that has to be acquired by project participants, mostly through inter-personal relating and communication. See section 5.2. The activities that need to be undertaken have to put in place effective processes that bear this practical matter in mind. Language and communication thus need to be seen as connotative instead of denotative (Maturana, 1978; Maturana & Varela, 1980, 1998; Stacey, 2007).

f) The acquisition of the project mandate as a phenomenal domain depends on the structure of *Dasein's* nervous system and may require dislodging other concepts. The nervous system embodies phenomena and this allows *Dasein* to interact with a variety of phenomenal domains. See sections 5.2 and 5.3. The phenomena are embodied as a range of concepts, analogies and theories. Because *Dasein* is in a continual state of becoming these inter-related phenomena stimulate and facilitate ongoing changes and additions that emerge from the structure of an existing foundation (Varela *et al.*, 1993; Llewelyn, 2003; Raelin, 2007).

g) Due to *Dasein's thrownness* the project mandate remains delicate and contested. Each interaction enables or constrains the stance *Dasein* takes on its being; the project mandate is thus a stage on which *Dasein* can express this stance. This ongoing need to preserve identity results in the project mandate being a delicate and contested item (Schatzki, 1992; Taylor, 1993; Stacey, 2007).

h) The nature of IS project results, accrues from, and depends on the success and rate of *Dasein's* learning, because team coherency, synergy and co-operation are directly influenced by the pace and extent to which the phenomenal domain is absorbed into the background and reflected as affordances.

i) One of the ways in which innovation results in an IS project is when *Dasein* makes connections with other phenomenal domains that are part of the structure of *Dasein's* nervous system. *Dasein* interacts with its consciousness using language and concepts. As *Dasein* acquires new

phenomena, connections are made with its other phenomenal domains. Innovation results as these separate phenomena are interrelated.

j) A project organisation is nothing more than a temporal process of human relating in which the project team members continually review their futures together by taking actions in the present. Instead of assuming that nothing happens until reward, motivation or monitoring systems are introduced by a manager, practitioners need to strive to become aware of the purpose being pursued by other actors, and externalise these schemas symbolically to encourage alignment with a suitable cognitive schema that is in accordance with the project mandate.

The research process that led to these outcomes has been iterative despite the linear presentation of the thesis. The next section gives a self reflection of the research process to approximate the process that has allowed these outcomes to emerge.

6.1 Self Reflection on the Research Process

The regional ontology design has been inspired by the problems which have resulted from the widespread assumptions that human beings engage in a world as rational reflective beings. These general expectations have become engrained into the expectations human beings have of themselves and others. As a consequence IS project practices and project management practices are also predominated by these assumptions which do not seem to materialise in as-lived experiences. At the outset of this research the researcher had to gain a better understanding of how these assumptions originate and what sustains them. Through this enquiry alternatives to positivism were investigated and possible theories that have the potential to

contribute to a different paradigm were discovered and investigated further. The two options that were found to be suitable for this study were Heidegger's theory of *Dasein* and Bourdieu's "Theory of practice". These were investigated in significant depth during the early stages of the research process and are discussed in chapter 3 of the thesis. At the outset the researcher assumed that with these theories a regional ontology could be formulated. Whilst this was the initial idea as the investigation continued the researcher realised that none of the theoretical concepts investigated offered a significant part of the solution which could provide a basis for extension. Initially, the researcher imagined that *Dasein* could potentially be the central concept from which an alternative could be crafted. Despite the richness of Heidegger's theories it was difficult to define the essence of IS project management with these concepts alone. On the other hand, Bourdieu's theories are intuitive but were deemed to be not rigorous enough.

Serendipitously, the researcher discovered the directed and relational process of structure and agency used by Harker *et al.* (1990) to describe the theory of practice. The model was appealing but the concepts of habitus and fields did not explain as-lived daily existence sufficiently. It was interesting to note that other researchers like Crossly (2001) had also made similar evaluations of the theory of practice. Crossly (2001) pointed to the potential the phenomenology literature offers to deepen Bourdieu's concepts. At the time of this research study there were, however, no attempts to merge concepts from phenomenology and sociology in a tangible way.

An initial attempt at the regional ontology was accomplished by using the relational model of the "Theory of practice" presented by Harker *et al*. (1990) as a basic concept to show social construction. The model was enhanced by equating Heidegger's concepts of *Dasein* and *background* to Bourdieu's concepts of *field* and

habitus respectively. These steps allowed for an accessible, intuitive model of social construction that was rigorous as well as representative of daily existence.

Understanding *enaction* using just the concepts from Heidegger and Bourdieu proved to be very difficult. *Being-in-the-world* and *disclosure* provided some understanding of how *enaction* can be mostly unconscious and only occasionally reflective. A deeper understanding of *enaction,* however*,* remained elusive until the regional ontology was metaphorically viewed as an autopoietic system. This connection made a number of concepts from the "Theory of living systems" accessible to provide a biological perspective on embodiment, *enaction*, learning and perceptually guided action. The "Theory of living systems" therefore galvanised the regional ontology by giving the model, which was largely comprised of sociological and phenomenological concepts, a biological dimension. As a result, a richer understanding of the more complex concepts of Heidegger discussed in section 4.6 became easier to grasp. Concepts such as *fore-having*, *fore-sight*, *fore-grasp*, mood, understanding, etc. which were difficult initially now appeared more coherent.

Once the regional ontology design became more rigorous and representative of IS project management practice, the researcher's concerns began to shift to a wider *for-the-sake-of-which.* The research process and the influences of researcher's embodiment on the research process became the focus. While a perspective of the IS project phenomenon and management process was only given in chapter 5, a much later stage of the research process, it should be noted that the researcher was comfortable that the regional ontology offered plausible principles that resonated with his practitioner background, and were also in accordance with the research contributions discussed in chapter 2.

To provide a publically accessible account of the research process, frameworks by Becker & Niehaves (2007) and Llewelyn (2003) were used in Chapter 3 as a basis to give an account of the epistemological assumptions. To give insight into the planned research process and its assumptions the framework by Becker & Niehaves (2007) allowed for the discussion to be accessible in rhetoric with which IS researchers identify. The frameworks were, however, based on a discussion that is in accordance with the adopted principled positions of *enaction* and the embodied researcher, instead of the conventional understanding of cognition as a separate process that is consciously invoked.

As the epistemological assumptions were being considered in section 3.6, the researcher began to really appreciate the effects theoretical structures and languages have in bringing forth a world. Although this was a belief since the start of the research project, a number of issues began to come together to take the researcher's understanding to a new level. At this point the researcher was able to see learning as the acquisition of a phenomenal domain that comprises various inter-related concepts. The researcher could also appreciate how the existing embodiment of learned concepts could impede the acquisition of other phenomenal domains. The real impact of these new insights to IS project management practice were only articulated in chapter 5 when the researcher needed to give a contemporary perspective of the IS project phenomenon and IS project management practice. The researcher could see in a tangible ways why *Dasein* cannot transcend its language and culture. It was only at this point that the researcher could see how this was possible at the learning level. At this stage the researcher could also appreciate Heidegger's choice of linguistic constructs that did not have established social and spatial meaning. These connections were made possible by Llewelyn's (2003) ideas (see section 3.7) which extended Maturana and Varela's ideas of the *unity* and phenomenal domain.

Once the research process and assumptions were clarified the interpretation of the regional ontology was undertaken. Chapter 5 began with a discussion of the regional ontology principles and also gave contemporary accounts of the IS project phenomenon and the IS project management process. Through the interpretation process the intent of the regional ontology also became practical. The interpretation process revealed how the regional ontology given in section 4.13 provides a context and schema, to allow for further development of theories, whilst also being able to coherently guide debate to extend IS project management practice.

The proposed regional ontology did not give preference to any specific way of conducting an IS project. Instead, the regional ontology gives characterisation of the determinants of IS project organisation based on the characteristics of IS phenomena in section 5.2. The new frame has implications for learning and competence development and some of these were discussed in section 5.4. The basis for these claims was justified using the "Theory of living systems" by Maturana and Varela, "the structure of daily existence" by Heidegger and the "Theory of practice" by Bourdieu. These three theories are extensive and only some parts were discussed in this thesis. Whilst all aspects of the theories were not explored the theories were found to be structurally similar and complementary. This research project did not find any serious contradictions that justify any delimitation to be given.

The present debates in IS project research space are diverse. As illustrated in chapter 2 there is tendency toward a similar direction. Chapter 2 did not discuss the many perspectives that continue to promote the PMBOK perspective. Based on the arguments of this thesis these options would appear to be short sighted but these alternative perspectives remain participant in creating the IS project management practice and research discourse. The way in which human beings are continually

socialised into practice implies that the risk of slavishly promoting practice would perpetually remain because of structural elements entrenched in society. The question of IS project management practice has therefore been intentionally left broad and the suggestions offered were qualified with the use of the word contemporary.

6.2 Future research

As social creatures human beings cycle through knowledge systems by representing (signification), reproducing (interacting) and legitimising (observing) various types of knowledge systems. There is thus a continual trajectory of being constructed by controlling systems of knowledge. PMBOK and the best practice discourse has been an example of a controlling discourse. Language and reflexivity have been discussed extensively because these are a means of allowing an engagement of different paths of trajectories in thinking and signification. Language is often a constructor of meaning because language is already imbued with signification and is able to orient specific reactions amongst beings. This thesis has used constructs from the regional ontology to argue that language and theorising in daily existence enable embodiments of the shared practical sense of a society or social group. When a project participant acquires domain knowledge in a project, they acquire not only a new use of their body, but a phenomenal domain that enjoins it to the collective life of the implementation environment by affording them the opportunity to "think" according to the shared schemas and prejudices of the group.

Reflexion offers some reparation to the ongoing becoming human beings experience. There are, however, also limitations with reflexivity. One limiting factor is that reflexivity can result in ironic self consciousness, cynicism and politically correct hypocrisy despite the potential to offer continual learning. More importantly,

however, the nature of *continually-becoming-toward-death* points to the problem of knowledge systems that can become controlling despite the continual changes that occur in all of us incessantly. Each experience sediments into a form of habitual and practical knowledge, a form of know-how that entails both ways of seeing and responding to what is seen, and which therefore disposes the agent to respond in "typical" ways to "typical" situations because shared languages are concrete embodiments of schemas of typification.

Because human beings develop a pre-reflective sense or grasp of their environments they also bring to bear habituated expectations in their perceptions. All perception is formulated whilst *being-in-the-world* and can therefore only be partial because all experiences, although similar, are always new. Knowledge therefore cannot be an end in itself because human beings have a tendency to habitualise their environments and contexts, while all public discourse changes constantly. Knowledge systems in this context can drift to become a controlling system of thought, like most of the best practices promoted as IS project management discourse have become.

In the light of these general observations afforded through the concepts of the regional ontology, further research on IS project management practice needs to take place. A number of opportunities exist. There is a need for more empirical focus now that there is some ontology direction to develop mid-range theories to act as proxies for the more fundamental and almost inaccessible concepts. There can also be further research on how to cause and promote regular *break-down* or reflection as an activity to enhance learning. Additionally, the nature of language and its effects on learning can also be theorised and developed further. Lastly, the regional ontology provides a theoretical construct and a basis that has potential to extend the systems thinking literature and project management more generally.

This thesis presented certain pervasive structures of IS project experience using a number of concepts to create a regional ontology that gives the essence of IS project management. The findings are certainly not the final word on the subject but are just a beginning to which more contributions can accrue.

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