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## **Are we there yet? Developing methodology in a knowledge management research project**

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# Are we there yet?

## Developing methodology in a knowledge management research project

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### Abstract

*The ways in which theoretical framework and methodology interact in research project design are complex.*

*This paper draws on a current PhD research project which seeks to better understand the relationship between knowledge and learning in organisations through the application of complexity theory. The researcher's focus on complexity theory as a critical feature of the theory of knowledge and learning in organisations creates a research environment within which selection of methodology emerges from the theory of complex adaptive systems (Holland 1995) and social complexity (Snowden 2002) and methods derived from theory of the collective mind (Spender 1996) and knowledge as interactivity (Stacey 2003b).*

*The paper aims to illustrate through example the interdependent relationship between thesis content and methodology. It highlights the need for researcher patience in developing research methodology out of the theoretical framework of the research (rather than developing methods and working back to epistemology), and sensitivity to the iterative and interactive nature of methodology development.*

### Introduction

Embarking on a research project in knowledge management for the novice researcher is to begin a journey into a daunting world of epistemological, theoretical and methodological complexity. The path for this journey is neither linear nor clear, appearing only as exploration progresses. The journey takes the researcher through a process of careful consideration of the theory that underlies the research field in an exercise of patience.

Of course, epistemology and empiricism are intricately intertwined in any knowledge management research. The way that researchers understand knowledge will inform not only the research question, but also the research approach. The question, 'What is knowledge?' (Pears 1971) has persisted across millennia (Wiig 1997) and is core to any investigation of the emergence, development, dissemination and institutionalisation of knowledge in organisations.

Debate over this question is no less common or passionate today than it was 2000 years ago. Indeed, current academic discussion expends enormous energy in attempting to clarify the divide over the nature of knowledge (McElroy 2003; Snowden 2003b). No single research project will answer the question nor quell the debate, instead each researcher must consider their own epistemological stance and begin inquiry through it.

It is not only the question of the nature of knowledge, however, that confounds researchers in knowledge management, the theory that emerges from the literature and underpins the research question will also have enormous impact on the research approach. The methodology is directed by the theory - when the literature points to a theoretical framework, the framework becomes the driver for the inquiry approach.

This paper describes the iterative nature of methodological design and the critical role a knowledge management thesis' theoretical frame plays in the selection of methodology and

methods. It describes this researcher's experience in working through epistemological issues, theoretical framework, methodology and methods and the complexity of aligning each layer with the theoretical framework of the theory underlying the thesis itself.

## **The research project**

This research stemmed from the feelings of disequilibrium generated by the researcher's immersion in the knowledge management literature of the mid-1990s. A student of organisational communication and adult education, this researcher's difficulty was triggered by her opposing epistemology to that which underpinned the system-focused knowledge management literature dominating the discourse of the time.

The researcher soon found that her struggle with the epistemological divide was not unusual. Indeed, it reflected the divide in knowledge management theory over the past decade, which has at its core an ancient debate around the nature of knowledge itself. Is knowledge about truth? Is knowledge about meaning? This divide has been reflected in practice that has fallen either toward codification or the personalisation of knowledge (see, for example, Ponelis and Fairer-Wessels 1998; McAdam and McCreedy 1999; Malhotra 2002).

To some extent, this debate and the researcher's discomfort have been reduced through insight provided by recent theory. New theoretical perspectives seek not only to recognise the value to organisations of both personalisation and codification to practice, but extend understandings of knowledge management to recognise the value of collective cognition and its role in facilitating the emergence of knowledge within organisations. These new perspectives highlight the role of individual, collective and organisational learning in the management of organisational knowledge.

In view of this changing focus, a new framework through which workplace learning theory and practice can be considered in its support of knowledge generation, transfer and application is required. The new perspectives on knowledge management highlight the limitations of traditional workplace learning practice in facilitating generative learning and new knowledge (Kurtz and Snowden 2003).

This research aims to develop theory that integrates workplace learning and knowledge management. The guiding question for this study is one that Snowden (2002) would call an attractant, *What workplace learning experiences support organisational knowledge?* The research question reflects a convergence of themes across research strands in knowledge management, organisational learning and workplace learning.

The objectives of the research are to:

- describe the themes arising from learning and organisational knowledge development experiences;
- illustrate the relationship between emergent themes;
- develop an integrated theory drawing on complexity theory;
- propose strategies for workplace learning that facilitate organisational knowledge development; and
- apply research methodology aligned with complexity theory.

## Theory informing this research

Over the past two decades the literature in knowledge management, organisational learning and workplace learning has increasingly reflected knowledge as problematic. In 1996, Spender explored this problem in an attempt to integrate theories of organisational knowledge, learning and memory. In doing so he rejected positivist approaches to organisational analysis, asserting that 'In an uncertain, non-positivistic world, where there is no privileged access to truth, there are always problems of meaning.' (Spender 1996: 65) and advocating the exploration of 'richer' epistemologies which '... can address more complex notions of uncertainty than are admissible in a positivist framework' (Spender 1996: 67).

A result of this more problematic approach to knowledge in the knowledge management literature has been the focusing of debate on diverse, yet overlapping and interacting aspects of knowledge and learning which converge in several key themes. For this researcher these themes are constructivism (Schwandt 2003), knowledge as an activity of interdependent people (Stacey 2003b), the collective mind (Spender 1996; Lakomski 2001), and complexity theory (Holland 1995; McElroy 2000; Kurtz and Snowden 2003).

These theoretical perspectives increasingly encroach on knowledge management theory and practice. Each brings important perspectives to the field, and each has strong implications for methods of inquiry in knowledge management.

### Constructivism

The literature frequently cites the work of Polanyi (1967; Polanyi and Grene 1969) in explaining or exploring knowledge and its nature in individuals, collectives and organisations (for example, Nonaka 1994; Spender 1996; Snowden 2002; Stacey 2003b) (for review see Ponelis and Fairer-Wessels 1998; Kakabadse, Kakabadse et al. 2003). The humanist paradigm in knowledge management is strongly influenced by this work and the research discussed here draws heavily on Polanyi's representation of knowledge. For Polanyi, knowledge is not so much about truth as it is about understanding and meaning. He describes knowledge as '... rooted in acts of comprehension' (Polanyi 1967: 33), rather than based on verifiable fact (Maddox 1993).

Polanyi's definition of knowledge highlights its embeddedness within human beings and its existence in human meaning-making. This perspective is aligned to a constructivist epistemological approach. A simple representation of the constructivist viewpoint is offered by Schwandt (2003: 305):

Most of us would agree that knowing is not passive – a simple imprinting of sense data on the mind – but active; that is, mind does something with these impressions ... in this sense, constructivism means that human beings do not find or discover knowledge so much as we construct or make it.

These constructions occur within a context and are developed through shared language, activity and understanding.

Constructivism, according to Schwandt (in Crotty 1998: 8-9) differs from constructionism in its focus on 'the meaning-making activity of the individual mind', Keeves (1999: 6) further illustrates the focus on the individual, 'Wisdom is unique to individuals, is slow to form, and is applied by individuals critically and practically. It is this individual knowledge that constructivist research is investigating'. This individual focus is important in understanding

the relationship between individual and organisational knowledge, and is an important foundation in the theoretical framework of this research.

The constructionist focus, in comparison, is on ‘the collective generation of meaning’. This collective meaning-making is an important theme in the knowledge management literature and has some resonance with the work of Stacey (2001; 2003a; 2003b) in his theory of knowledge as an activity of interdependent people.

### **Knowledge as an activity of interdependent people**

The work of Ralph Stacey (2001; 2003a; 2003b) has also been of critical importance to the development of the theoretical framework for this research project. Stacey’s work bridges knowledge management, organisational learning and individual learning through a focus on the actions of human beings ‘...in creating patterns of meaning in their iterated interaction with each other. As people interact, coherent patterns of meaning, of knowledge, are perpetually iterated’ (Stacey 2003b: 328). Stacey relates to knowledge as an ‘... ephemeral, active process of relating’ (Snowden 2002 drawing on Stacey 2001).

Stacey’s work resonates with Vygotsky’s (1962) work in early childhood education on activity theory in which ‘... socially embedded activity precede[s] the development of individual consciousness’ (in Spender 1996: 70). Vygotsky’s focus on new knowledge as arising from the ‘...mutual functioning of individuals with their biological potentials and the society with its symbols, tools and other cultural goods’ provides a bridge across the theories of constructivism, knowledge as interactivity to what may be termed the ‘collective mind’.

### **Collective mind**

The concept of ‘collective mind’ directs focus to the space between individuals where knowledge is negotiated and exercised through a social, rather than individual, identity. ‘...[T]he social implicit element of the individual’s knowledge processes is typically called collective’ (Spender 1996: 71) and the relationship between the social and individual is interdependent, ‘... the mind of consciousness is manifested in social institutions, that is, ways of life, which give identities, self concepts, to individuals’ (Stacey 2003b: 328 in reference to Hegel's dialectical logic).

In knowledge management and organisational learning, this theory provides an important node of intersection in the literatures. A central argument in the organizational learning literatures is on the relationship between individual and organizational knowledge (Easterby-Smith, Crossan et al. 2000). The focus on collectivity of mind and knowledge reduces what has been presented as a dichotomy to a phenomenon where ‘...the individual is the singular and the social is the plural of interdependent people’ (Stacey 2003b: 327).

Development of the concept of the collective mind by Spender and Stacey leads to consideration of the relationship between organizational learning, knowledge and culture, where ‘Collective knowledge comprises both meaning (cognitive, affective, symbolic and cultural) and praxis (behaviours, rituals and organizational routines)’ (Spender 1996: 73), and:

External, symbolic features, traditionally believed to represent culture, and internal non-symbolic ones such as beliefs, values and meanings, usually taken to be the property of the individual mind, are no longer seen to represent separate worlds but one world’ (Lakomski 2001: 69).

Acceptance of paradox in understandings of knowledge and learning in organisations is facilitated by perspectives offered by the ‘new sciences’.

## **Complexity**

The value of the new sciences in understanding organisations is emerging in a range of disciplines. Chaos theory, quantum mechanics, self-organising systems, complexity theory, non-linear systems and fractals are being used in rethinking organisation, management, leadership and knowledge management. Awareness of emergent order, however, has had little impact on organisational theory or practice until most recently (Kurtz and Snowden 2003). When McElroy (2000) brought together the diverse fields of knowledge management, organisational learning and complexity theory inspired by the novel work on adaptation and complexity by John (1995) it offered a new perspective for the consideration of the emergent, complex and organic nature of knowledge and learning in organisations. Complexity theory provides a clear divergence from the engineering approach to organisations that has dominated management thinking and practice for the past hundred years.

The application of complexity theory to knowledge management has been developed by Snowden (Snowden 2002) to become social complexity theory. It reflects an interpretation of Holland's (1995) mathematical approach to complexity that uses the metaphor provided by complexity rather than its mathematical model. For Snowden, like Stacey (2003a), the complexity sciences provide a '... source domain for analogies with human action'.

The value of the driving metaphor of complexity theory to organisations is in the refocusing of theory and practice on the complex adaptive nature of systems within which knowledge arises. Through this understanding, organisations adapt and evolve organically in response to a changing environment and efficiency is seen as reductionist. In biological systems latitude is important in allowing evolutionary capability (Snowden 2003a). Knowledge in this paradigm is emergent, arising from collectives of knowledge agents and collectively resulting in organisational learning. Knowledge management becomes focused on managing boundaries and attractants for knowledge creation and development (knowledge 'becoming') as well as the management of knowledge which is, or becomes knowable (knowledge 'being') (Bhatt 2000).

Thinking about knowledge as naturally emergent in a complex adaptive system focuses theory and practice on the search for knowledge 'levers' (Holland 1995), those triggers within the knowledge ecosystem which lead to generative, rather than adaptive, change - the focus being on innovation rather than replication of knowledge.

The new sciences also provide a new perspective on learning in organisations. The perspective allows for consideration of mind as both 'inside' and 'outside' the person, '... the mind is thought of as a whole or system of interacting parts contained within a boundary' (Stacey 2003a: 237). This resonates with Lakomski's concepts through connectionism of the mind as supported by the organisation which is developed to underpin the connections between its members (Lakomski 2001).

Learning, then, is about the shared understandings that emerge in the absence of any plan or program for outcomes, indeed, if the knowledge objective were known, the question would be directed. Through complexity, the novel and valuable knowledge self-organises through the interaction of diverse agents and the amplification of difference through 'nonlinear iteration' (Stacey 2003a) into new and novel knowledges.

## **Impact of theoretical framework on methods of inquiry**

As a neophyte this researcher brought to this study assumptions about what a rigorous research project would look like. An early entry in the researcher's learning journal reflects her naivety.

It's funny to think that only 4 months ago I presented to the research colloquium on what I thought was my research question (I'd had another epiphany that week and thought I knew everything once again!). The question was quite close to my current one, but I stated it not as a problematic (which all my understanding now shows was an appropriate approach), but as a hypothesis. I was sure I needed to be able to state my research questions in a sentence that began... 'My thesis is that ...' and all the research was about was proving the point. The past 6 weeks or so of delving into methodology has provided some of the most important learning of my life.

The theories emerging from the literature search and review conflicted with positivist approaches to inquiry. The study's theoretical framework posed enormous challenges to prior assumptions and the researcher was led to consider more interpretative systems of understanding and other non-positivist approaches to the thesis.

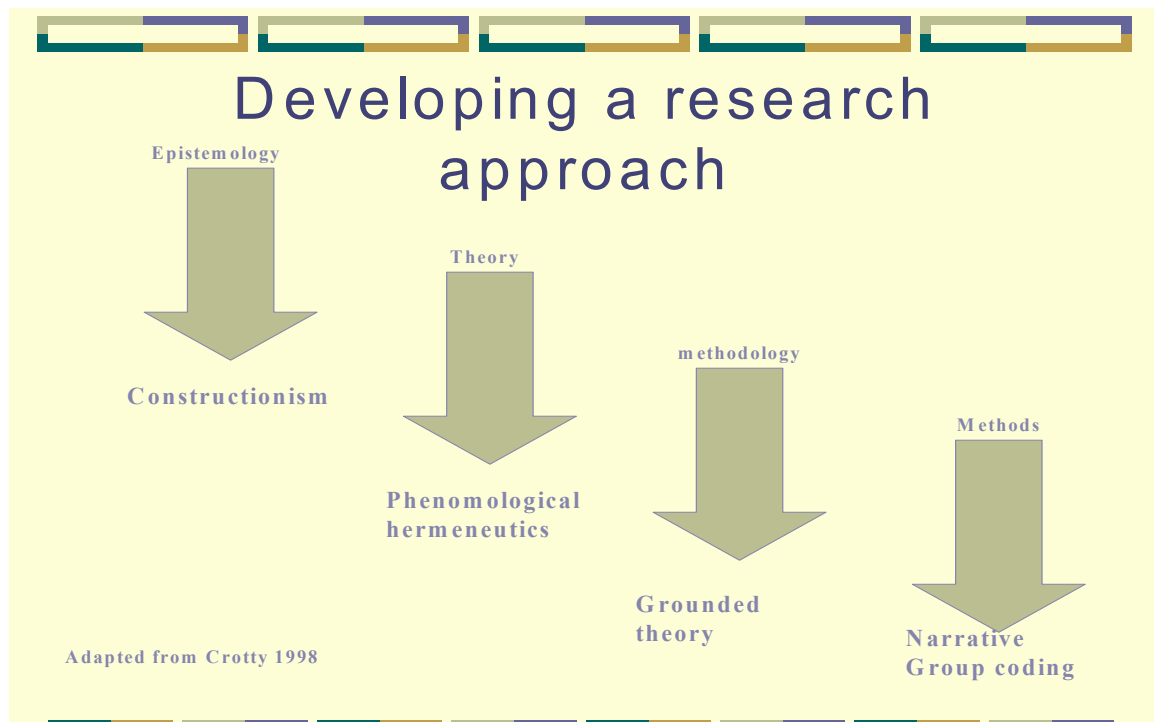
I struggled with the intertwining concepts, particularly where I had a focus in complexity theory, thought I'd like to use approaches being used in KM through Cynefin, but couldn't substantiate the techniques methodologically without preparing a PhD on the use of the strategies as methodologically sound techniques. Margaret's [advisor on methodology] help in finding a sympathetic approach to the theory was fantastic. Finding out about how grounded theory resonated with complexity theory and then coming across the work of Vaughan (1992) on theory elaboration was so satisfying – while theory elaboration differs slightly from what I need to do in basing the grounded theory in complexity, her arguments and strategies support the direction this research needs to take. (Realised quite a while ago now, that while I experience these epiphanies, there's always a trigger, a slight adjustment in understanding, a new metaphor or a twist that develops through a conversation or text that leads to the 'clunk' of insight).

This researcher's confrontation of her own mental models about research approach, while difficult, was well supported by literature in qualitative research (Strauss 1998; Sturman 1999; Denzin and Lincoln 2000). Qualitative approaches have given validity to the observation of emergent phenomena as an appropriate way to investigate and make sense of some features of complex systems.

## **Reconciling theoretical framework and methodological approach**

For this research project the choice of methodology was not the researcher's – the literature, more than inviting, actually directed the methodological approach. The most difficult role the researcher had was in exercising patience while the literature allowed an approach to emerge.

Crotty's (1998) four elements model illustrates the relationship between epistemology, theory, methodology and methods and was used in this research to facilitate development of a research approach that was aligned with the thesis content.



## Epistemology

The constructionist epistemology upon which this research is developed has been discussed earlier.

## Theory

Knowledge management approaches that are based in the ‘new sciences’, particularly complexity theory, are aligned to a phenomenological hermeneutic research approach. In order to investigate the experiences of organisational members in relation to the way knowledge is created, developed, disseminated and institutionalised, and in order to maintain alignment between theoretical framework for the study and epistemological approach, this study also aligns itself with the phenomenological hermeneutic tradition.

Hermeneutics aims to ‘understand understanding’ (Odman and Kerdeman 1999: 186) by ‘bringing into focus the deep assumptions and meanings that inform everyday existence’. It places interpretation of a phenomenon within a specific context and has a focus in ontology. Understanding is toward application and is intended to go beyond the teller’s own understanding (Crotty 1998). The hermeneutic approach strives to uncover meaning unnoticed by the teller, making explicit understanding that remains tacit to the teller.

Crotty describes phenomenological research as the researcher’s ‘... attempt to break free and see the world afresh’ (Crotty 1998: 86). This research aims to look at experience holistically, to widen the perspective in order to ‘... understand human beings as individuals in their entirety and in their proper context’ (Keeves 1997: 18). It attempts to ‘... discover a fresh perspective, one unprejudiced by acculturation’ (Sadler 1969: 377 in Crotty 1998: 80).

A phenomenological hermeneutic approach reflects Heidegger’s (1962 in Crotty 1998) focus on pre-understanding to make the implicit explicit in order to find meaning.

This study recognises that in defining the question for research, the researcher assumes knowledge of the answer, and so the question remains open to enrichment through the

research. Following the work of Malinowski (1922 in Taft 1999) the researcher will work from her understanding of the theory but will not aim to prove certain hypotheses. The researcher, however, recognises the role of ‘preunderstanding’ in her interpretation of the phenomenon (Odman and Kerdeman 1999) and explicitly admits the role of complexity theory in sensitising the question and its exploration.

The researcher situates herself within the study, recognising the role the researcher plays in the sense-making process and the impact of the researcher on research findings in an iterative and fluid research approach. The researcher will maintain research rigour through ‘disciplined subjectivity’ (Sturman 1999: 108) and her own sense-making process will contribute to the exploration of organisation’s experience.

This research assumes that within set boundaries, the setting of research ‘attractants’ (Snowden 2003a) or foci will lead to the organic emergence of themes and concepts that are meaningful to the research. Complexity theory suggests that some phenomena only demonstrate coherence retrospectively and that the self-organising capacity of complex systems requires the freedom of agents to interact in ways which are undirected. The flexibility of this research design will facilitate this freedom and attempt to find ‘retrospective coherence’ (Snowden 2003a) in the phenomena which emerge in its findings.

## **Methodology**

While hermeneutics does not aspire to ‘... ground understanding in theory’ (Keeves and Lakomski 1999: 186) Strauss and Corbin (1998: 178) suggest that adaptation of grounded theory will include its combination with other methodologies including phenomenology and hermeneutics.

Glaser and Strauss (in Sturman 1999: 104) describe grounded theory as theory grounded in the data collected rather than from theory generated from logical deduction. They argue that this approach can allow more useful hypotheses to arise than inductively developed hypotheses. Popper (in Sturman 1999: 104) argues, however, that it is ‘impossible to start with pure observation, that is, without anything in the nature of a theory’. Vaughan (1992: 195) agrees:

The paradox of theory is that at the same time it tells us where to look, it can keep us from seeing. Glaser and Strauss argue against initiating qualitative analysis with any preconceived theory that dictates relevances in concepts and hypotheses prior to the research ... but this method of elaboration relies upon comparing data with some sensitising theory, concept, or model. It rests on the assumption that a researcher never begins with a clean slate.

In this case, the researcher will explicitly explore the relationship between complexity theory and workplace learning experience in relation to organisational knowledge. Following Vaughan (1992) the researcher intends to ‘... use theories, models and concepts as sensitising devices, rather than translating them into formalized propositions that are tested’ (Vaughan 1992: 196). In this way, ‘We take intuitive practice – using theories about the world to organize and understand it – and make the practice overt so we can better direct our analysis of social situations.’ (Vaughan 1992: 196).

This interpretive research is designed to collect data in a natural setting to ‘get in deep’ (Schostak 2002: 75) in order to create ‘thick interpretations’ (Denzin and Lincoln 1998: 92) through ‘lived experience’ elicited through narrative.

## Methods

This research is designed to maximise emergence of new theory from interactions between participants. For this reason, narrative is used extensively in this research, following the work of Clandinin and Connelly (2000) and the strategy of knowledge management practitioners (Snowden 2002; Kurtz and Snowden 2003). Narratives, according to Stacey (2001: 124), rather than facts, '... make experience meaningful and are the privileged mode of sense-making'. This study is designed to draw on that sense-making in order to understand better knowledge and learning.

Similarly, methods draw on collectives of individuals in order to access the social construction of meaning in the organisational context. Weick (1995 in Stacey 2001) regards sense-making as both individual and social and effects the way in which text is constructed and interpreted. 'When we describe something we are ... reporting how something is seen and reacted to, and thereby meaningfully constructed, within a given community or set of communities' (Crotty 1998: 64).

This study draws on interactions of collectives in both the development and analysis of narratives. While individual stories will be told, they will be told within a social context and will be subject to sense-making at the collective level.

In summary, the constructionist epistemology underlying the study led to a research topic that recognised knowledge as constructed within a context; the literature's reflection of constructivist theory meant that the research must aim to reflect individuals' constructions of meaning; knowledge as an activity of interdependent people meant that the research must allow knowledge to emerge through the interaction of individuals in their sense-making; the collective mind directed the research to the understandings and practices of collectives; and complexity theory demanded an approach that was undirected, iterative, drew on diversity, was social, influenced by context and facilitated emergence of novel characteristics. In order to meet these various demands the researcher took a phenomenological hermeneutic approach to the research through a theory elaboration version of grounded theory methodology in a specific case employing group narrative and group coding methods.

## Conclusion

The relationship between the theory of knowledge that guides a researcher's quest for a research question, the relationship between that research question and the theory that underpins its analysis and development, and the interactivity of the theory with research approach have been presented here as complex and iterative.

It seems that research method literature assumes that these relationships are widely understood and very little is written explicitly on the subject (Yeo 2002). For this researcher, however, the journey from area of interest in a research field through to development of methods was a difficult and confronting one, and one for which her assumptions about rigorous research left her ill-prepared.

The researcher's role in this journey was as a passenger rather than a driver, and regardless of her keenness to reach her destination and talk to colleagues about what she would *do* in her research, she was confined to waiting to see where the theory might lead. It seemed an interminable journey, but led eventually to the only real methodological choice available to the research topic.

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