

Organisational Knowledge - *discrete manageable Item or complex dynamic Flow?*

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DECLARATION

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Summary

We are in the final stages of a transition from the industrial era to the information era. Some may argue that we are already there. The impact of this transition is felt in all spheres of everyday life, it is present in shifting paradigms and it fuels constant waves of change. In attempting to master this changing world of the last few decades, academics and practitioners focused their attention on the management of knowledge in organisations.

The concept of knowledge has been an elusive one for two thousand years and introducing the ideas of management and organisation to this already blurred notion brings about more distortion. This elusiveness is ever-present when organisational knowledge management is written about, presented or discussed. There always seems to be a duality in its nature – on the one end of the spectrum, the manageability of knowledge itemised as “thing” and on the other end the unmanageability of “flows” creating knowledge. There is a distinct discourse equating knowledge to information. These concepts are used interchangeably and there is a strong focus on the use of technology to manage knowledge stocks. In other treatises, we are constantly reminded about the inherent complexities of knowledge, humans, relationships and how people, individually and collectively, create meaning.

This thesis sets out to determine whether knowledge should be seen as a manageable item or whether it is more complex, a flow, that might be guided and nurtured but never “managed”; or whether, it is in fact, both a “thing” and a “flow”.

With neither theory testing nor theory development in mind, the thesis is a journey into the existing epistemological literature, investigating various views on and typologies of knowledge, aiming to add value through interpretation. As a comparative study, the thesis discusses the views of authors on knowledge management and sense making. Following the comparison of “thing” and “flow”, the thesis concludes by likening the research question to a similar paradox of light – knowledge should always be managed as a “thing” and a “flow” similar to light being both a particle and a wave.

Opsomming

Ons bevind ons tans in die finale stadia van die oorgang tussen die industriële era en die inligtingsera. Die trefkrag van hierdie oorgangsfase word in alle sferes van ons alledaagse lewens beleef. Dit is teenwoordig in gedurig veranderende paradigmas en dit dien as katalisator vir die ontstaan van golwe van verandering. In 'n poging om hierdie veranderende wêreld van die afgelope paar dekades, te bemeester, het akademici en praktisyns, hulle aandag gevestig op die bestuur van kennis in organisasies.

Die konsep van kennis blyk steeds ontwykend te wees na twee duisend jaar en om gedagtes rakende bestuur en organisasie by hierdie reeds onduidelike begrip in te bring, veroorsaak meer verdraaiing. Die ontwykende aard hiervan is konstant teenwoordig wanneer daar oor die begrip van kennis geskryf word en wanneer bespreking daarvoor plaasvind. Dit wil voorkom asof daar 'n dualisme bespeur kan word – aan die eenkant van die spektrum, word daar na die bestuurbaarheid van kennis as 'n konkrete “ding” verwys en aan die ander kant word verwys na die onbestuurbaarheid van strome van kennis. Daar is 'n bepaalde gesprek wat kennis gelyk stel aan inligting. Die twee begrippe word wedersyds gebruik en daarbenewens word die aanwending van tegnologie om die kennisvoorraad te bestuur sterk beklemtoon. In ander skripsies word ons gedurig herinner aan die inherente kompleksiteit van kennis; van die mens en sy verhoudings asook die ingewikkelde wyse waarop mense afsonderlik en gesamentlik, voortdurend sinsbetekenis skep.

Hierdie skripsie het ten doel om te bepaal of kennis gesien moet word as iets wat bestuur kan word en of dit iets is wat meer kompleks en meer vloeibaar is, wat eerder gevoed en gelei as “bestuur” moet word en of dit in werklikheid beide vloeibaar en konkreet is. Die benadering wat gevolg word in hierdie skripsie moet nie gesien word as 'n poging om teorieë te toets of te ontwikkel nie, maar eerder as 'n reis deur die bestaande epistemologiese literatuur, om onderskeie sienings en tipologieë oor die begrip kennis, te ondersoek, met die doel om dmv vertolking waarde toe te voeg. Die skripsie bespreek die siening van outeurs oor die bestuur van kennis en die skepping

van sinsbetekenis dmv 'n vergelykende studie. Na afloop van die vergelyking van kennis as item en kennis as stroming, sluit die skripsie af met verwysing na die soortgelyke paradoks van lig. Net soos lig beide as 'n partikel en 'n golf beskryf kan word, so behoort kennis altyd bestuur te word as beide 'n item ("ding") asook 'n stroming ("golf").

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Firstly, I would like to acknowledge my appreciation for the opportunity and ability to learn: “*How can I know what I think ‘till I see what I say*” - this seemingly quaint phrase with peculiar undertones forming an integral part of this thesis has haunted me since April 2004. I think I am barely beginning to come to terms with it. It had a profound impact on my views and values.

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Chapter One:

Points of Departure

1.1. Introduction

Manuel Castells commences the first volume of his trilogy, *The Information Age: Economy, Society and Culture* with the words: “Toward the end of the second millennium of the Christian era several events of historical significance transformed the social landscape of human life. A technological revolution, centered around information technologies, began to reshape, at accelerated pace, the material basis of society”.¹

Castells argues that, although the changes and the emphasis on information and knowledge do not constitute a revolution similar to the industrial revolution (yet), there are profound changes – the world has moved from industrial capitalism to informational capitalism, from static and ordered to fast changing and chaotic, from bureaucratic and structured to flat and networked.

Castells’ statements provide a good summary of the factors that lead to a renewed interest in *knowledge*, a specific focus on the *management of knowledge* and the birth of the concept of *organisational knowledge* over the last few decades.

The factors mentioned (a rapid global revolution fuelled by technology and touching the very basis of society) focused organisation and management theorists on the pivotal role of information and knowledge in what can be referred to as the information era or knowledge economy.

Drucker² refers to knowledge being applied to tools, processes and products during the industrial era and knowledge being applied to knowledge as determining factor of

¹ Castells (2000).

² Drucker (1993).

production in the knowledge society. Knowledge, now, has an economic value - “What is new in the late twentieth century is that knowledge assets are coming to constitute the very basis of post-industrial economies. Prompted by the rapid spread of the information economy, we are only just beginning to think of knowledge assets as economic goods in their own right.”³

Before Drucker, in 1985, Strassman⁴ recognised the importance of *organisational* knowledge in terms of competitive advantage: “It's the accumulated knowledge of your organization that represents your competitive advantage, rather than the accumulated assets of your capital in buildings and in machines”⁵. In 1974, Henry,⁶ emphasised the new importance of *Knowledge Management* for public administration and specifically public policy formulation.

Although most scholars agree about the importance of information and knowledge in the new economy, the concept of knowledge has been a quest for two thousand years. Knowledge is, as Nonaka aptly describes it, still a “multifaceted concept with multilayered meanings. The history of philosophy since the classical Greek period can be regarded as a never-ending search for the meaning of knowledge”.⁷ This view is echoed by Cilliers: “The issues around knowledge—*what* we can know about the world, *how* we know it, what the *status* of our experiences is—have been central to philosophical reflection for ages”.⁸

If we add the notion of “*manage*” and “*organisation*” to the already blurred concept of knowledge it leads to what Tsoukas describes as “a double failure: to understand

³ Boisot (1998: 2).

⁴ Zuboff (1985).

⁵ Zuboff (1985: 21)

⁶ Henry (1974).

⁷ Nonaka (1994: 15).

⁸ Cilliers (2000: 8).

the generation and utilization of knowledge we need a theory of knowledge and to understand organizational knowledge we need a theory of organization”.⁹

An element that further blurs the landscape is that knowledge has always been implicated in what humans do, as stated by Tsoukas¹⁰ “...anything we do, how we transform resources into products and services, crucially depends on the knowledge we have at our disposal for effecting such transformation. An ancient artisan, a medieval craftsman and his apprentices and a modern manufacturing system all make use of knowledge”. In the knowledge economy codified (or formal, theoretical) knowledge has, however, acquired a central place.

Any discussion of knowledge management should also consider that knowledge is linked to personal knowledge and that all knowledge is created by individuals. Nonaka and Takeuchi point out that “In a strict sense, knowledge is created only by individuals. An organization cannot create knowledge without individuals. The organization supports creative individuals or provides contexts for them to create knowledge. Organizational knowledge creation, therefore, should be understood as a process that “organizationally” amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization. This process takes place within an expanding “community of interactions”, which crosses intra- and inter-organizational levels and boundaries”.¹¹

1.2. Objective and Research Question

The aim of this thesis is to explore whether knowledge in an organisational context can be seen as:

1. A discrete, tangible item (or object or “stuff” or “thing”) that can be “managed”; or whether it is

⁹ Tsoukas (2005: 119).

¹⁰ Tsoukas (2005: 141).

¹¹ Nonaka & Takeuchi (1995: 59).

2. More dynamic – a flow, embodied in human cognition, socially constructed by individuals, that might be facilitated, assisted or enhanced in an organisational context but never actually “managed”; or whether it is
3. Actually both of the above?

With reference to the current body of knowledge, the question can also be defined as follows:

1. What is it that we actually want to manage? – is it the codified knowledge artefacts embedded in procedures, rituals, documents and (especially) technology or is it (the) human beings in a social context who generate knowledge both individually and collectively?

Within the current literature there are numerous (and sometimes fairly disparate) points of view relevant to the research question. Since this theme is central to the thesis, it can be highlighted by means of three examples as an introduction to the thesis:

1.2.1. Knowledge as “Thing”

The first example has a focus on management and deals with the view of knowledge as a tangible item that can be managed as presented by Firestone and McElroy¹²: "To us it seems clear that knowledge is not a process but an outcome of knowledge production and integration processes. In other words, we believe that knowledge should be viewed as a ‘thing’ not as a process".

1.2.2. Knowledge as “Flow”

On the other end of the scale, Stacey¹³ states “There is a taken-for-granted view that there is a category called organizational knowledge and that it can and must be managed. This reflects an underlying way of thinking in which knowledge is reified, treated like a ‘thing’ that can be possessed, that corporations can own” and adds

¹² Firestone & McElroy (2003: 111).

¹³ Stacey (2001: 4).

“Knowledge cannot be managed, and there is no need to manage it, because knowledge is participative self organizing processes patterning themselves in coherent ways.” Stacey continues: “Knowledge is not a ‘thing’, or a system, but an ephemeral, active process of relating. If one takes this view, then no one, let alone a corporation, can own knowledge. Knowledge itself cannot be stored, nor can intellectual capital be measured, and certainly neither of them can be managed.”¹⁴

1.2.3. Knowledge as both “Thing” and “Flow”

The third example is from Snowden¹⁵ stating “properly understood, knowledge is paradoxically both a thing and a flow” supported by Zack “As a practical matter, organizations need to manage knowledge both as object and process”.¹⁶

Based on these cursory introductory examples the research question becomes clear – precisely what are we referring to (or do we want to do, or can we actually do) if we talk about “organisational knowledge management”?

The thesis deals with views concentrating on the tangible, codified element of knowledge as well as those focused on the human, the cognitive and the social construction of knowledge.

1.3. Methodology

This study is a conceptual analysis aimed at providing a descriptive overview of various points of view on the manageability of knowledge as represented by a variety of authors and stakeholders within the current organisational epistemological discourse.

For the comparative part of the study, the thesis utilises the work of Davenport and Prusak.¹⁷ Their views on data, information and knowledge as well as issues related to codifying and managing knowledge are investigated to serve as an example of

¹⁴ Stacey (2001: 4).

¹⁵ Snowden (2002: 102).

¹⁶ Zack (1999: 46).

¹⁷ Davenport & Prusak (1998).

knowledge as discreet, manageable item. Weick,¹⁸ who concentrates on organisational sense making, is referred to as representative of the element of “flow” in organisational knowledge.

The motivation for the choice of authors forms part of the methodology and I would like to expand on this aspect in this introduction.

Davenport and Prusak¹⁹ have formulated a widely used definition of knowledge and its relationship to data and information. They do however state that not all knowledge can be codified “We simply can’t represent some knowledge effectively outside the human mind.”²⁰, their work focuses on the acquisition, codification and transfer of knowledge and provides a basis to investigate knowledge as discreet item that can be “managed” in reference to the research question.

In terms of Weick, I would like to use a passage from Cilliers: “In Nicholas Roeg’s remarkably visionary film *The Man Who Fell to Earth* (1976), an alien using the name Thomas Jerome Newton (superbly played by David Bowie) tries to understand human culture by watching television, usually a whole bunch of screens at the same time. Despite the immense amount of data available to him, he is not able to understand what is going on directly. It is only through the actual *experience* of political complexities, as they unfold in time, that he begins to understand. By then he is doomed to remain earthbound. I am convinced that something similar is at stake for all of us. Having access to untold amounts of information does not increase our understanding of what it means. Understanding, and therefore knowledge, follows only after interpretation”²¹.

Weick²² focuses on perception, interpretation and sense making - how we make sense of the world, how organisations make sense and he provides a frame of reference for

¹⁸ Weick (1995).

¹⁹ Davenport & Prusak (1998).

²⁰ Davenport & Prusak (1998: 71).

²¹ Cilliers (2000: 11).

²² Weick (1995).

organisational cognition highlighting the fact that individuals and organisations continuously and dynamically construct meaning in a social context, always retrospectively in interaction with and response to their environments and use this sense made as a springboard for action: "Sensemaking is about contextual rationality. It is built out of vague questions, muddy answers, and negotiated agreements that attempt to reduce confusion" – and provides evidence that knowledge cannot be itemised as something to be “managed”. It is important to note, that while Weick does not focus on knowledge management per se, the concept of sense making is regarded as an important contribution by various authors²³

As a research project, not aimed at theory building or theory testing, the thesis aims to explore - it represents and interprets rather than evaluates or critiques the various stances and nuances in the literature. It can be seen as an interpretive overview, a journey into the current body of knowledge, representing the various approaches in organisational epistemology.

1.4. Delimitations: Framing the Research Question

Although the study includes references to views defining knowledge, the objective is neither to seek a definition of concepts nor to provide definitive relationships between concepts like data, information and knowledge.

The thesis is aimed at interpreting views related to organisational knowledge and seeks to add value by comparing views related to knowledge as tangible discreet item, knowledge as socially constructed flows and knowledge as a balance between the two.

The thesis aims to address the rather modern phenomenon of the *organisational* management of knowledge and does not focus on various philosophical schools of thought about the nature of knowledge.

The study must be seen, in the context of what is phrased as “the new economy”, or the “information age” where knowledge is regarded as the mode of production, providing a competitive edge and something that must be managed. This modern

²³ Stacey (2001); Tsoukas (2005); Snowden (2002).

phenomenon (in the context of the revolutionary nature of progress in information and communication technologies over the last few decades leading to networks of organisations and networks of nodes in a global connected world) is aptly described by Castells as “the network enterprise makes material the culture of the informational, global economy: it transforms signals into commodities by processing knowledge”.²⁴

Organisational knowledge is a “broad church” of disciplines and elements; Tuomi²⁵ mentions four disciplines in the origins of organisational knowledge namely, Organisational Information Processing (including Information and Communication Technology), Business Intelligence, Organisational Cognition and Organisational Development.

Subramani, et al.²⁶ used an author-co-citation analysis (a bibliometric methodology) to examine KM research from 1990-2002 for determining certain concepts prevalent in citation analysis – their research suggests that the research in Knowledge Management can be viewed as being comprised of the following domains:

1. Knowledge as Firm Capability;
2. Organizational Information Processing and IT Support for Knowledge Management; Knowledge Communication, Transfer and Replication;
3. Situated Learning and Communities of Practice;
4. Practice of Knowledge Management;
5. Innovation and Change;
6. Philosophy of Knowledge; and
7. Organisational Learning and Learning Organisations.

²⁴ Castells (2000: 188).

²⁵ Tuomi (2002).

²⁶ Subramani et.al (2003).

Kakabadse, et al. summarises the various influences on Knowledge Management theory as follows: "There are a variety of disciplines that have influenced and informed the field of KM thinking and praxis - prominent being philosophy, in defining knowledge; cognitive science (in understanding knowledge workers); social science (understanding motivation, people, interactions culture, environment); management science (optimizing operations and integrating them within the enterprise); information science (building knowledge-related capabilities); knowledge engineering (eliciting and codifying knowledge); artificial intelligence (automating routine and knowledge intensive work) and economics (determining priorities). As a result there are a host of working definitions of KM and embryonic philosophies circulating in the literature and around corporations of the world"²⁷

In terms of the specific research question one can add further elements like systems theory, complexity theory, cognitive psychology, sense making theory and others – it is therefore important to delimit the thesis to the following²⁸:

- An analysis of the current organisational epistemological debate on the manageability of knowledge (in the form of a literature review but providing additional classifications or typologies of current thinking)
- An overview of concepts in managing knowledge as developed by Davenport and Prusak²⁹, *specifically focused on and limited to* their perspectives on data, information, knowledge and the acquisition, codification and management of organisational knowledge.

²⁷ Kakabadse et al. (2003: 79).

²⁸ Given the magnitude of elements that can impact on data, information, knowledge, management and organisation theory, there are various disciplines relevant to the research, such as complexity theory, information systems, information management, artificial intelligence, systems thinking and others, that will be referred to but not addressed in detail. The width and breadth of certain elements (such as the concept of tacit and explicit knowledge or the distinction between data, information and knowledge) are vast and no single study can address these in detail.

²⁹ Davenport & Prusak (1998).

- An overview of the *nature* and *properties* of sense making as proposed by Weick³⁰
- Although the research is not aimed at theory building, the conclusion will expand on a recommended organisational approach to knowledge management.

1.5. Relevance of the Research

Various authors have commented on the problematic nature of organisational knowledge management³¹. The research question addresses the fundamental issue of what we are trying to manage - Tsoukas³², in evaluating some of the current concepts on organisational knowledge management comments “it is still not clear what knowledge is nor what makes it organizational”, and continues in advocating even more sophisticated theoretical explorations: “Our understanding of organizational knowledge (or any other topic of interest) will not advance if we resign ourselves merely to recycling commonsensical notions of knowledge”. Thoughts that are echoed by Fuller³³ “People who claim to know something about KM must decide whether the field is more about knowledge or management. The dark secret of this field is that its name is an oxymoron... knowledge management is little more than talk about ordinary management in a world that has become a little too complex for traditional managers to handle.”³⁴ Broadbent also refers to knowledge management as an oxymoron - “perhaps an oxymoron and it will be followed in a few years by managing wisdom when neither are really possible”.³⁵

³⁰ Weick (1995).

³¹ Nonaka (1994); Fuller (2002); Allee (1997a); Allee (1997b); Firestone & McElroy (2003); Tsoukas (2005); Snowden (2002); Earl (2001); Stacey (2001).

³² Tsoukas (2005: 118).

³³ Fuller (2002).

³⁴ Fuller (2002: 2).

³⁵ Broadbent (1998: 23).

Spiegler addresses the issue as follows: “In ‘knowledge management’, the focus and accent are on management. KM alludes to a function like *management(x)*, where *x* can be anything, i.e., {*x = data, information, resource, project,..*}. Once the accent of KM is on management, the discussion is well-structured, dealing with the capture, storage, sharing and so on of that *x*. This approach is indeed a black box. A similar fate doomed words like ‘system’ as in decision support systems, where the focus is more on system than on the decision making process”.³⁶ Davenport & Völpel³⁷ continues on this theme - "The ‘management’ in knowledge management has also been the subject of controversy. Some critics argue that knowledge cannot be managed because it is invisible and intangible. But if we take management to mean any concerted attempt to improve our understanding of how knowledge is created, distributed, or used, then knowledge management hardly seems impossible. Management has previously involved the manipulation of other invisible, intangible phenomena, e.g. motivation, inspiration, and creativity".³⁸

Assudani states that “knowledge” means different things when viewed from different perspectives. “Even within management literature, alternative thoughts exist as to what knowledge means – is it a process of leveraging resources for organizational learning or innovation; is it a resource – a form of capital (other forms of capital being land, labor, and financial); or is it both – a process and a resource?”³⁹

And there are more questions: Allee⁴⁰ asks the important question: “if managing knowledge is the solution, what is the question? Just exactly what are we trying to solve when we attempt to manage, create or build knowledge?”

In addition to the fact that there are more questions than answers, a cautionary note is also sounded: according to Teece Knowledge Management research (and the Knowledge Management discipline) must build on existing disciplines of strategy,

³⁶ Spiegler (2000: 5).

³⁷ Davenport & Völpel (2001).

³⁸ Davenport & Völpel (2001: 212).

³⁹ Assudani (2005: 31-32).

⁴⁰ Allee (1997a).

management, technology and others: “As research advances, it ought to be especially sensitive to preserving and building upon the already significant literatures on the management of technology, entrepreneurship, innovation, and business strategy. Indeed, there is a real danger that knowledge management will become discredited if it proceeds in ignorance of these large extant literatures, thereby creating unnecessary intellectual clutter and confusion.”⁴¹ An even harsher warning on Knowledge Management as “fad” that will fade away comes from Wilson⁴² – he describes it as a management fad promulgated by consultancy firms and there is a probability that it will fade away like all management fads.

In addressing the issues outlined in paragraphs 1.2 (Research Question) and 1.3 (Methodology), the thesis does not aim to answer these questions nor address the issues and warnings definitively, but aims to add value by way of interpretation.

Like Metaxiotis, et al.⁴³, this thesis explores agreements and disagreements in the field of knowledge management and with reference to their views on an absence of a knowledge management framework (see Figure 1), this thesis explores two frameworks (acquisition, codification and management of knowledge) as well as a sense making framework for knowledge management that forms part of the current debate.

⁴¹ Teece (1998b: 298).

⁴² Wilson (2002).

⁴³ Metaxiotis et.al. (2005).

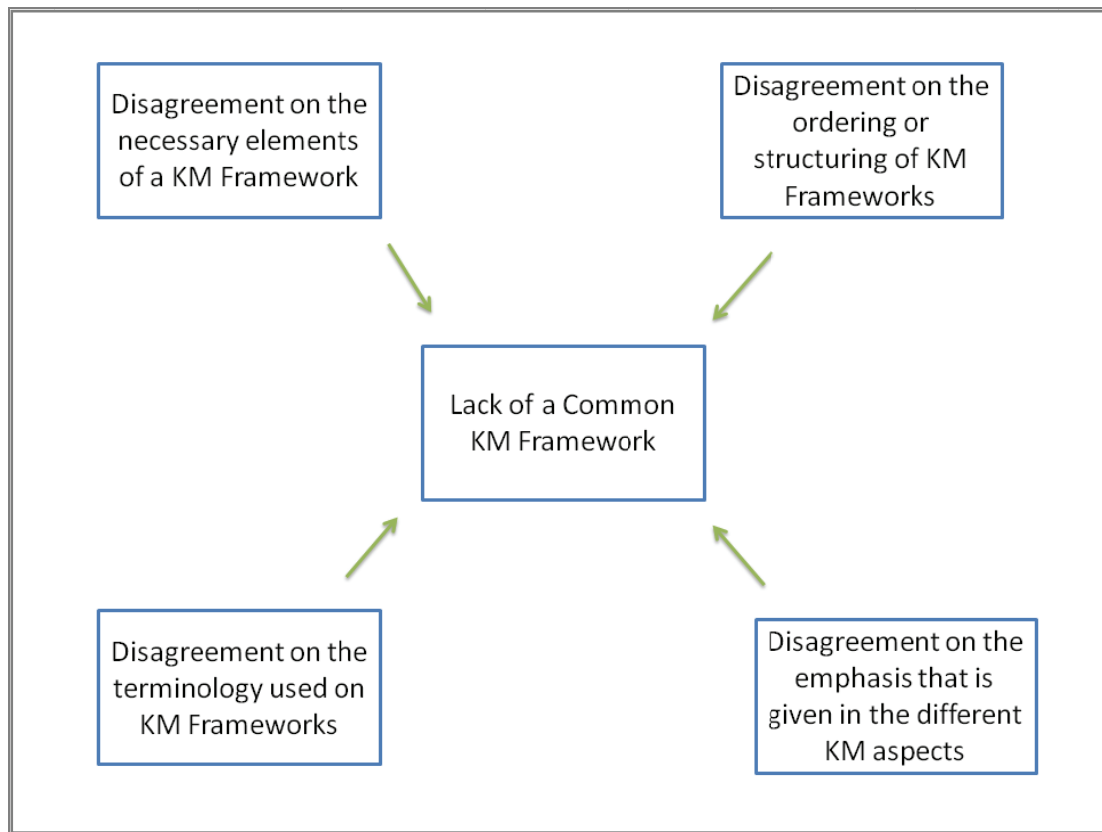


Figure 1: Lack of a common KM framework: (Based on Metaxiotis, et al.⁴⁴)

1.6. Overview of Content

1.6.1. Chapter 1: Points of Departure

Chapter 1 addresses the background to the research question, the relevance of the research as well as the methodology and delimitations of the thesis.

1.6.2. Chapter 2: Concepts of knowledge

An outline of various approaches to the concept of knowledge, including typologies of knowledge and an overview of what can be described as “mainstream thinking” in terms of organisational knowledge management, is provided in this chapter. This chapter serves as foundation for both chapters 3 and 4.

⁴⁴ Metaxiotis et al. (2005: 12).

1.6.3. Chapter 3: Knowledge as Discreet Item (or Object)

This chapter focuses on the concept of knowledge, the difference between data information and knowledge, as well as the acquisition, codification and management of knowledge based on the work of Davenport and Prusak⁴⁵.

1.6.4. Chapter 4: Knowledge as Flow

In chapter four, I focus on the nature and properties of sense making as proposed by Weick⁴⁶.

1.6.5. Chapter 5: Summary and Conclusion

An approach to knowledge management, incorporating elements linked to the management of knowledge as discreet item or object as well as knowledge represented as a dynamic flow within organisations, is presented in this chapter.

The flow of the document is illustrated in Figure 2:

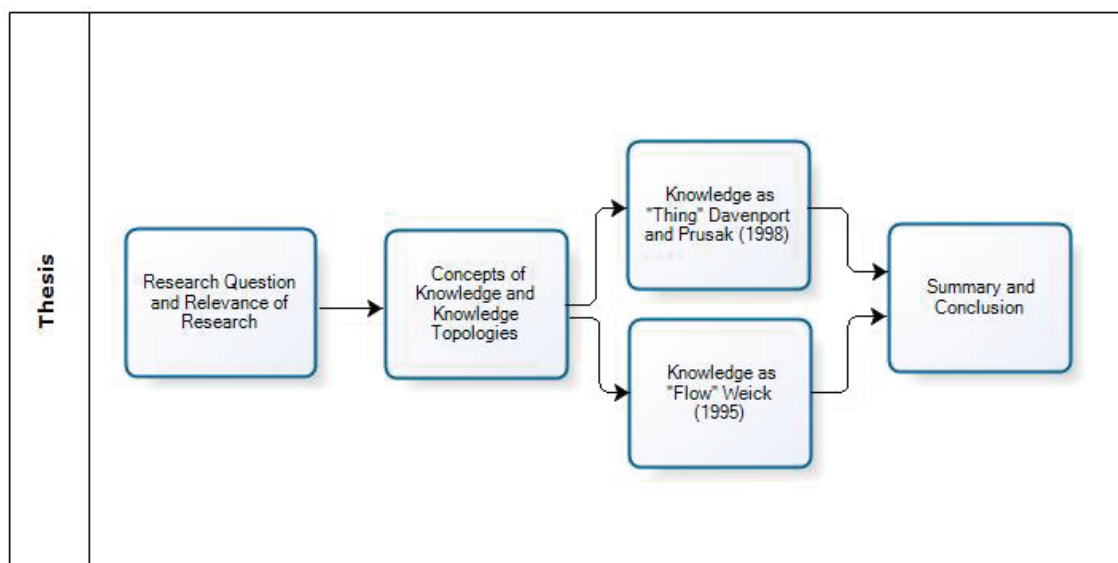


Figure 2: Flow of the Thesis Document

⁴⁵ Davenport & Prusak (1998).

⁴⁶ Weick (1995).

Chapter 2:

Concepts of Knowledge

1.7. Introduction

The concept of knowledge has been an elusive one for thousands of years – the added concepts of “organisation” and “management” tend to make the concept even more difficult to digest.

One word that comes to mind is “messy” and Verna Allee uses this description best: "Knowledge is messy. Because knowledge is connected to everything else, you can't isolate the knowledge aspect of anything neatly. In the knowledge universe, you can't pay attention to one factor".⁴⁷ She continues with the statement "How you define knowledge determines how you manage it".⁴⁸ I would like to build on this idea and state that *“how you define knowledge, organisation and management will determine what you do with it”*.

There is, to a large degree, inconsistency when dealing with the concept of knowledge, the term is broad - Alvesson and Kärreman describe the concept of knowledge as “inconsistent, vague, broad, two-faced and unreliable”.⁴⁹

This chapter aims to provide insight into various concepts of knowledge and knowledge management as represented in the literature. As pointed out by Kakabadse et al, “A consistent theme in all espoused definitions of KM is that it provides a framework that builds on past experiences and creates new mechanisms for exchanging and creating knowledge”⁵⁰, accordingly this chapter aims to explore the commonalities of approaches to knowledge management by investigating a series of

⁴⁷ Allee (1997b: 71).

⁴⁸ Allee (1997b: 71).

⁴⁹ Alvesson & Kärreman (2001: 997).

⁵⁰ Kakabadse et al. (2003).

classifications or typologies of Knowledge Management including “schools of knowledge management”, tacit / explicit typology, generational or historical typology and others.

The chapter also contains a section describing what can be seen as “mainstream thinking”. The latter focuses on the emphasis by various authors on knowledge to be created, captured, managed and distributed as well as references to the continuing focus on the tacit / explicit categorisation and the interaction between tacit to explicit.

A central theme is the differentiation between knowledge as discreet manageable item and knowledge as a more complex flow or process. The distinction between knowledge and knowing, the typology of schools of knowledge management, the tacit / explicit and generational typologies as starting points, illustrate the movement of the concept (from closely linked to information and treatment similar to the asset of information within an organisation) to something more complex, more interactive and less manageable.

The debate about the similarities of and differences between data, information and knowledge is normally associated with concepts of knowledge since “what is knowledge to one person is information to another”.⁵¹ These elements of data, information and knowledge and their interrelationship, are partially addressed in this Chapter but covered in more detail in Chapter 3, using the views of Davenport and Prusak⁵² as a point of departure.

It is difficult to address typologies of knowledge without reference to the concept of tacit knowledge – as aptly put by Tsoukas: “Ever since Nonaka and Takeuchi⁵³ published their influential *The Knowledge Creating Company*, it has been nearly impossible to find a publication on organizational knowledge and knowledge management that does not use the term ‘tacit knowledge’”.⁵⁴

⁵¹ Bhatt (2002: 32).

⁵² Davenport & Prusak (1998).

⁵³ Nonaka & Takeuchi (1995).

⁵⁴ Tsoukas (2005: 142).

Although this chapter addresses the explicit / tacit typology, it is regarded as embedded in the overall debate on organisational knowledge and, although important, it is not the major focus. The author tends to agree with Mooradian⁵⁵ when he states that the concept of tacit knowledge has come to represent too much: “The concept of tacit knowledge is used to represent a number of challenges that companies face in managing knowledge. It is able to do so because its philosophic roots are deep and authors such as Nonaka and Takeuchi have recognized the power of the concept to explain many of the problems organizations face. However, it has come to represent too much and has therefore lost much of its precision and usefulness”.^{56 57}

I use the word “Concepts” as part of the title for this chapter since the aim is not to focus on defining these daunting and problematic elements but rather to focus on *approaches* to knowledge, organisational knowledge and Knowledge Management.

The approaches to knowledge management are not only important from an epistemological point of view but also impact on practicing knowledge management in organisations – as aptly described by Call: “Perhaps it is the vagueness of the definition of knowledge management that both allows it to flourish and dooms it to failure. Those in the know realize that knowledge management is different at every turn; it is continually changing and evolving. What constitutes a successful Km project at one company may not spark the faintest interest at another. In fact, a successful Km project today may become stiff and unwieldy or overburdened six months from now”.⁵⁸

⁵⁵ Mooradian (2005).

⁵⁶ Mooradian (2005: 108).

⁵⁷ The thesis also excludes the debate about the philosophical origins of the concept of tacit knowledge.

⁵⁸ Call (2005: 19).

1.8. Knowledge as Thing and Knowing as Flow

Cook and Brown⁵⁹ provide a distinction between knowledge and knowing. According to these authors, knowledge is something that is possessed whilst knowing is used in action (or doing).

Consider the following example used by Cook and Brown:⁶⁰

- Miriam has knowledge of physics: It is something that she possesses. Her knowledge (both tacit and explicit) is abstract since it is about the tangible world but not in the tangible world.
- This possession (the knowledge) is static since it is not always used (if she eats or sleeps the knowledge she possesses about physics is irrelevant and not used). The possession “knowledge” is needed for action (she can as an example solve problems related to physics – she does something and she needs knowledge to do so. Knowledge is needed for action but is not necessarily action in itself.

Knowing, in contrast with knowledge, is not the basis for action – *it is action*: “we use the term knowing to refer to the epistemological dimension of action itself. By ‘knowing’ we do not mean something that *is used* in action or something *necessary* to action but rather something that is *part of action*.”⁶¹ Knowledge “the possession” is a tool in the service of knowing and knowing is regarded as dynamic.

The Cook and Brown classification is regarded as important in the context of this thesis since knowledge, “the possession” can be regarded as thing or discreet tangible item or stuff that can be managed whilst knowing is linked to dynamic flows (and action). Although the example used by the authors concerned individual knowledge,

⁵⁹ Cook & Brown (1999).

⁶⁰ Cook & Brown (1999: 387).

⁶¹ Cook & Brown (1999: 387).

the possession and action concepts also apply to organisations (possessing knowledge and using this in knowing to do things).⁶²

The knowledge / knowing argument is also pursued by Cohen⁶³ who (with reference to general views of Nonaka) points out that the noun knowledge implies a “thing” that can be managed whilst the verb knowing suggests a process. It might be possible to promote knowing or to motivate knowing but not possible to capture or store “knowing”.

1.9. Schools of Knowledge

Earl⁶⁴ addresses the problem of defining knowledge management by identifying certain “schools of knowledge management” with specific attributes. The schools are described in Figure 3:⁶⁵

⁶² This classification also played a part in the selection of authors for the comparative study in Chapters 4 and 5. Davenport and Prusak (1998) provide a plan and strategy to capture and manage knowledge, whilst Weick (1995) focuses on making sense of the world, a continuous puzzle where knowledge is used productively as a tool for action.

⁶³ Cohen (1998).

⁶⁴ Earl (2001: 217).

⁶⁵ The figure represents a summary of the Earl classification

Attribute ↓	Schools of Knowledge Management						
	Technocratic			Economic	Behavioural		
	↔			↔	↔		
	Systems	Cartographic	Engineering	Commercial	Organizational	Spatial	Strategic
Focus	Technology	Maps	Processes	Income	Network	Space	Mindset
Aim	Knowledge Bases	Knowledge Directories	Knowledge Flows	Knowledge Assets	Knowledge Pooling	Knowledge Exchange	Knowledge Capabilities
Philosophy	Codification	Connectivity	Capability	Commercialization	Collaboration	Contactivity	Consciousness

Figure 3: Typology as proposed by Earl⁶⁶

⁶⁶ Earl (2001).

Earl's main objective is to provide a practical approach, a starting point of where to begin with knowledge management initiatives and what types of knowledge management initiatives can be launched. This is necessary since he also refers to the problematic nature of defining knowledge (as well as determining the types of knowledge management). According to Earl, Knowledge Management has its roots in various disciplines such as philosophy and epistemology, sociology and computer science and the dilemma is that once an organisation embraces the concept they do not always know where to start - his framework serves as a practical starting point for knowledge management initiatives.

1.9.1. The Technocratic Classification

Under the Technocratic label, there are 3 knowledge management schools (Systems, Cartographic and Engineering).

The Systems School is focused on managing codified explicit knowledge via knowledge repositories⁶⁷.

According to the systems school, the knowledge creation process starts with a problem, when a solution is found by an individual through experimentation; this solution can be evaluated by peers and then submitted to the internal database. If another member finds him or herself in a similar situation, he/she can retrieve knowledge from the organisational repositories. Blackman and Henderson describes the individual process of seeking a solution, the validation of the solution submitted to the organisational knowledge repository, the validation of the solution and the subsequent use of the solution by others as common organisational knowledge as "social construction based on individual experience, codification and validation".⁶⁸ It

⁶⁷ The Systems School can be linked to the Stage 1 view of knowledge management in the generational typology detailed in paragraph 1.12 and incorporates the effort of transforming tacit to explicit knowledge as discussed in paragraph 1.10

⁶⁸ Blackman & Henderson (2005: 156).

translates to experience being made explicit and codified with a specific focus on information and communications technology systems to support the management of codified knowledge.

The Cartographic School is focused on mapping knowledge within the organisation to indicate who is knowledgeable in specific areas and to make these individuals accessible to others. These knowledge directories are not repositories storing knowledge but rather “gateways to identify who might be a source of knowledge anywhere in the enterprise through conversation and contact rather than to access a knowledge base which not only may contain inadequate knowledge, but also have answers to rather too precise questions”.⁶⁹

The Cartographic school makes the “knowers” known within the organisation, again, these “knowers” can become self organising thus leading to social construction of more knowledge.

Information and Communications Technology plays a central role in this school to enable seekers of knowledge to find the “knowers” As described by Fowler the use of technology “provides the potential facilitator and enabler of capabilities within the knowledge building cycle”.⁷⁰

The Engineering (or Process) School has its origins in business process re-engineering as proposed by authors like Hammer⁷¹. The process school focuses on the descriptions of processes and routines within the organisation and can describe these routines as guidelines or enforce it with technology: “it may be that process descriptions are not recommendations about learned best practice, but rather instructions enforced by the technology, whatever the rhetoric on decentralisation and empowerment might be. The knowledge held by the KMS is not taken and coded from individuals working in

⁶⁹ Earl (2001).

⁷⁰ Fowler (2000: 109).

⁷¹ Hammer (1990).

context, but rather from a designer of the system who has obliterated what was known”.⁷²

According to Blackman and Henderson, the engineering or process school concerns *management* information and *management* knowledge – “generally less structured and routine, and frequently strategic in nature. The knowledge managed by the system has a cartographic element – mapping knowledge areas and knowledge workers – and a systems element, where descriptions and content of previous managerial processes, such as benchmarking, best practice and so on, are available”.⁷³

Information and Communications Technology play a central part again: “Critical success factors in this school, implied by these examples, are that both knowledge (expertise, experience, and learning) and information (intelligence, feedback, and data analyses) are provided by systems and intranets to operatives, staff, or executives”.⁷⁴

1.9.2. The Economic Classification

Within the Economic Classification, the Commercial School of Knowledge Management focuses on knowledge as organisation asset. It is “overtly and explicitly concerned with both protecting and exploiting a firm's knowledge or intellectual assets to produce revenue streams (or rent)”.⁷⁵

This classification neatly fits the views of Davenport and Prusak on knowledge management that: “explicitly recognizing knowledge as a corporate asset is new, however, as is understanding the need to manage and invest it with the same care paid to getting value from other, more tangible assets”.⁷⁶ It is also related to views of organisational knowledge as intellectual capital; managing intangible assets of the

⁷² Blackman & Henderson (2005: 159).

⁷³ Blackman & Henderson (2005: 159).

⁷⁴ Earl (2001: 222).

⁷⁵ Earl (2001: 222).

⁷⁶ Davenport & Prusak (1998: 12).

organisation and viewing knowledge as part of the resources of an organisation. The intellectual capital view of the organisation is aptly described by Wigg as “the value of a commercial enterprise, its market value, consists of its financial capital and ‘everything else’. Financial capital represents the enterprise’s book value and consists of the value of its financial and physical assets. ‘Everything else’ defined as the ‘intellectual capital’, consists of assets created through intellectual activities ranging from acquiring new knowledge (learning) and inventions to creating valuable relationships”.⁷⁷ Stewart also emphasises the importance of knowledge assets and states: “knowledge assets – that is intellectual capital – have become more important to companies than financial and physical assets....knowledge is what we buy sell and do”.⁷⁸

The underlying philosophy of this school is the commercialisation of knowledge as asset focusing on “the firm’s internal resources as the basis for creating competitive advantage”.⁷⁹ This resource based view is linked to competence and the ability of the organisation to act⁸⁰.

The importance of knowledge as resource is emphasised by Albrecht who states “Information is rapidly becoming a profitless commodity and knowledge is becoming the new competitive advantage”.⁸¹

Earl describes the critical success factors of this school as follows: “One critical success factor in this school appears to be the development of a specialist team or function to aggressively manage knowledge property. Otherwise it is too easily forgotten. A second is the development or acquisition of techniques and procedures to manage intellectual assets as routinized process. Otherwise there is suboptimization, or a

⁷⁷ Wigg (1997b: 400).

⁷⁸ Stewart (2003: 7).

⁷⁹ Von Krogh & Roos (1995: 59).

⁸⁰ Von Krogh & Roos (1995).

⁸¹ Albrecht (2006: 26).

danger that companies spend too much time trying to measure intellectual capital rather than actually developing and exploiting it”.^{82 83}

1.9.3. The Behavioural Classification

Three schools are classified under the behavioural group, namely Organisational, Spatial and Strategic.

The Organisational School focuses on organisational and other structures, formal or informal, that pool knowledge, as Earl elaborates: “Often described as “knowledge communities.” the archetypal organizational arrangement is a group of people with a common interest, problem, or experience. These communities are designed and maintained for a business purpose and they can be intra- or interorganizational”.⁸⁴ The aim is to learn, interact, collaborate and share. According to Blackman and Henderson this school promotes self-organisation since it “seeks to capture both what is known, where this can be codified, and who knows what, where this is emergent or tacit”.⁸⁵ The core philosophy of the school is collaboration.

Although Information and Communication Technology can play a role in supporting collaboration, it is classified as behavioural since the emphasis is on interaction between members of groups and communities – “an important feature of knowledge communities is that they bring together knowledge and knowers. Typically, communities are supported and informed by knowledge bases provided over networks”.⁸⁶

⁸² Earl (2001: 223).

⁸³ Albrecht (2006) provided this statement, not in a Knowledge Management context, but in an article about super trends that impact on business.

⁸⁴ Earl (2001: 223).

⁸⁵ Blackman & Henderson (2005: 161).

⁸⁶ Earl (2001: 224).

Important elements related to the Organisation School are⁸⁷:

- It will work well in an organisation where there is a tradition of networking and interaction.
- Technology might be used to support knowledge sharing but human interaction is social in nature and the flow of knowledge is easier in face to face situations.
- Tacit knowledge is likely to be discovered in human interaction
- The structures for sharing do not need to be formal in nature
- Socialisation promotes the exchange of knowledge

Chua⁸⁸ found that the relational element interaction and level of social interaction lead to a better quality of knowledge being generated. These relational elements (the kinds of relationships developed over time) play a critical role in knowledge creation. Chua also states that the relational dimension of social interaction is more important than the structural (properties of the social system such as linkages between people) and cognitive (resources providing shared meaning) dimensions.

The Organisational School can also be linked to the question of how knowledge becomes organisational (from individuals). If we consider organisational rules, processes and practices as part of this school, we can address the organisational nature of knowledge. Tsoukas states: In a weak sense, knowledge is organizational simply by it being generated, developed and transmitted by individuals within an organization. This is obvious but unrevealing. In a strong sense, however, knowledge becomes organisational when, as well as drawing distinctions in the course of their work by taking into account the contextuality of their actions, *individuals draw and act upon a*

⁸⁷ Earl (2001).

⁸⁸ Chua (2002).

*corpus of generalizations in the form of generic rules, produced by the organization.”*⁸⁹

Linked to the Organisational School, the Spatial School is based on the premise that “modern commercial buildings, technology and practices – offices grouped by function and hierarchy – are not particularly conducive to conversation, interaction, learning and sharing”.⁹⁰

Earl states that “Both organizational and physical architectures have often kept people apart rather than connected them. And the pursuit of business efficiency often has eroded or removed opportunities to meet people you do not need to interact with formally, to reflect or exchange ideas, or to break out of a clinical office environment.”⁹¹

Although Information and Communication Technology can facilitate communication (via groupware, specialised applications or E-Mail) the emphasis should be on the social, face to face interaction (and contactivity).⁹² Spatial knowledge systems do not act as repositories of information but facilitate human contact in order to share knowledge.

The Strategic School, according to Blackman and Henderson differentiates itself as follows from the other: “for this school, corporate rhetoric such as mission and objectives outlines desired future experiments. Knowledge concerning products,

⁸⁹ Tsoukas (2005: 124).

⁹⁰ Blackman & Henderson (2005: 162).

⁹¹ Earl (2001: 226).

⁹² Although it is not the focus of this study, it is interesting to note that this reasoning might have led to development of new social networking technologies such as the popular Facebook application, where technology becomes the social interaction point. The principle is also manifested in new office design like the Innovation Hub in Pretoria. Castells (2000) provides a detailed overview of how the network society has impacted on architecture.

background science and customers, for example, are all used to develop new products and strategies consistent with these directions”.⁹³

The Strategic School is about strategic competitiveness: “The strategic school sees knowledge management as a dimension of competitive strategy. Indeed, it may be seen as *the* essence of a firm's strategy.”⁹⁴

The typology proposed by Earl⁹⁵ provides an overview of managing knowledge from a distinct “thing” in the form of codification and technology, to connectivity of people, accessibility of people, the harnessing of intellectual capital to organisational knowing and the strategic importance of organisational knowledge as illustrated in Figure 4. It provides a platform for the comparative study contained in the following chapters since it illustrates the principle of knowledge as tangible asset versus knowledge as complex flows.

⁹³ Blackman & Henderson (2005: 163).

⁹⁴ Earl (2001: 227).

⁹⁵ Earl (2001).

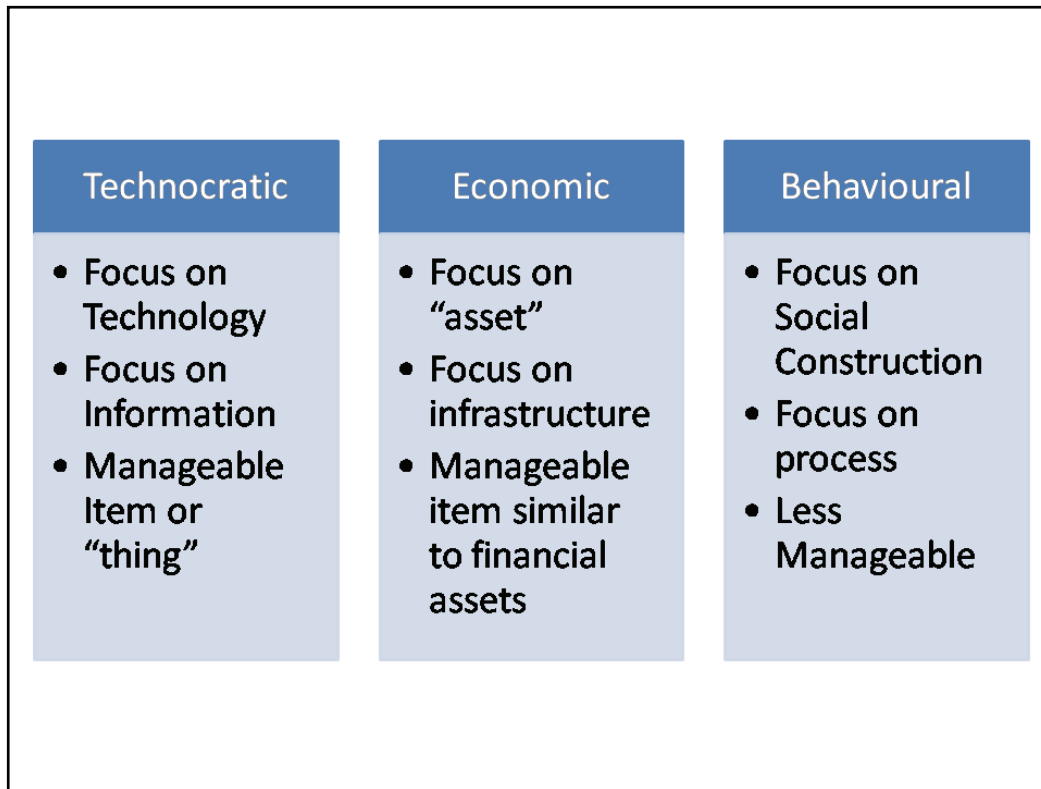


Figure 4: Moving from "thing" to "flow": Summary of Earl's typology

1.10. Explicit as Thing and Tacit as Flow

Nonaka and Takeuchi's concepts of explicit and tacit knowledge can be seen as one of the most influential in the knowledge management literature.

A large number of authors refer to this typology and use it extensively when approaching knowledge or defining knowledge management⁹⁶

Their main classification is as follows: "...we classify human knowledge into two kinds. One is explicit knowledge, which can be articulated in formal language including grammatical statements, mathematical expressions, specifications, manuals, and so forth. This kind of knowledge thus can be transmitted across individuals

⁹⁶ Stewart (2003); Tsoukas (2005); Tsoukas (2001); Castells (2000); Snowden (2002); Snowden (2000); Seely Brown & Duguid (1998); Fowler (2000); Firestone & McElroy (2003); Stacey (2001); Stacey (2000); Allee (1997a); Wigg (1997a); Popadiuk & Choo (2006); Tuomi (2002); Bhardwaj & Monin (2006); Mooradian (2005); Alavi & Leidner (2001).

formally and easily.A more important kind of knowledge is tacit knowledge, which is hard to articulate with formal language. It is personal knowledge embedded in individual experience and involves intangible factors such as personal belief, perspective, and the value system".⁹⁷ In this definition explicit knowledge is regarded as an item that can more easily be managed and shared. In this definition, explicit knowledge is "formal and systematic".⁹⁸

McAdam et al provides the following view of tacit knowledge: "Tacit knowledge is also technical or cognitive and is made up of mental models, values, beliefs, perceptions, insights and assumptions. Moreover it is demonstrated when someone masters a specific body of knowledge or uses skills like those gradually developed by master craftsmen. Cognitive tacit knowledge incorporates implicit mental models and perceptions that are so ingrained that they are taken for granted".⁹⁹

Similar to Nonaka and Takeuchi, McAdam et al states: "Tacit knowledge, the knowledge that workers possess but do not articulate, is associated with terms such as "skill," "know-how," "working knowledge," and "expertise" that are used to describe knowledge about and ability to perform work".¹⁰⁰

Tacit knowledge can be seen, in the context of this thesis as representing the "flow" involving intangible elements. The tacit / explicit elements can be extended to include:

- Formalised organisational artefacts and symbols (explicit) / individual know-how (tacit)
- Formal processes and practices (explicit) / Informal processes and collaboration (tacit)

⁹⁷ Nonaka & Takeuchi (1995: viii).

⁹⁸ Nonaka (1991).

⁹⁹ McAdam et al. (2007: 45).

¹⁰⁰ McAdam et al. (2007: 45).

- Repositories (explicit) / social exchanges (tacit)

It is important to note that Nonaka and Takeuchi do not regard explicit and tacit knowledge as mutually exclusive but as complementary - "In our view, these two types of knowledge are not totally separate but are mutually complementary entities. They interact with and interchange into each other in human creative activities by individuals or groups, which is the key assumption of our dynamic theory of organizational knowledge creation. More precisely, we assume that new organizational knowledge is created by human interactions among individuals with different types (i.e. tacit or explicit) and different contents of knowledge."¹⁰¹

The emphasis is on *individual knowledge* becoming *shared knowledge* through interaction, the context and the content of knowledge. The explicit / tacit dimension can also be linked to the conversion of knowledge, transforming existing knowledge into new knowledge bringing about innovation within the organisation.

Although knowledge starts with an individual, there is "a process that 'organizationally' amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization."¹⁰²

Explicit knowledge can be shared more easily, as Teece comments: "While knowledge assets are grounded in the experience and expertise of individuals, firms provide the physical, social, and resource allocation structure so that knowledge can be shaped into competences. How these competences and knowledge assets are configured and deployed will dramatically shape competitive outcomes and the commercial success of the enterprise. ... Uncodified or tacit knowledge, on the other hand, is slow and costly to transmit."¹⁰³

¹⁰¹ Nonaka et al. (1996: 205).

¹⁰² Nonaka & Takeuchi (1995: 59).

¹⁰³ Teece (1998: 63).

In their SECI (Socialisation, Externalisation, Combination and Internalisation) model, Nonaka and Takeuchi¹⁰⁴, identify four modes in which this conversion takes place:

1.10.1. Socialization

In this mode an individual can acquire tacit knowledge through interaction and sharing. The individual can learn through seeing and doing, a type of “on the job” knowledge acquisition¹⁰⁵.

1.10.2. Externalization

This is the process where tacit knowledge is converted to explicit concepts. What is learnt through socialisation can now be utilised in explicit form.

1.10.3. Combination

Combination occurs when individuals bring together various elements of explicit knowledge from various sources to produce new explicit knowledge

1.10.4. Internalization

With internalisation explicit knowledge is converted into tacit knowledge and the cycle can start again to share this tacit knowledge via socialisation.

With the SECI model, knowledge goes through a spiral of “flow” to “thing” and back to “flow” – when the organisation empowers its members this spiral gets strengthened leading to more innovation, creation of new knowledge and learning. Organisational knowledge thus comes from experience that is shared, made explicit and internalised by others.

¹⁰⁴ Nonaka & Takeuchi (1995).

¹⁰⁵ Nonaka & Takeuchi use the example of a member of a software development team volunteering to be an apprentice to the head baker at Matsushita to gain the tacit knowledge about kneading bread in order to automate the process.

1.11. European and American as Thing, Japanese as Flow

Lloria¹⁰⁶ studied various approaches to knowledge management and provides the following summary on the concept of knowledge management:

- Knowledge management is related to business practice and research and is trans-disciplinary in nature.
- Knowledge Management is more than technology management or information management; there is a human element that needs to be considered and although information technology is necessary, it should not be the cornerstone of knowledge management.
- Knowledge management is a broad concept made up of a variety of activities such as identification, creation, development, sharing, transformation, retention and others.
- Knowledge is primarily found in people and it is developed through learning. “Effective knowledge management implies that such knowledge goes from being a human asset to being a business asset. In this process, we underline the importance of a definite commitment on the part of all members of the organization, a correct diffusion of knowledge in the firm and especially the successful incorporation of processes and systems, products and services so that knowledge becomes institutionalized in the firm and remains with its members”.¹⁰⁷ This view is important in terms of linking personal knowledge to organisational knowledge with the latter being embedded in culture, processes, products, services and systems and links to the strategic aims of knowledge management to add value in the form of new opportunities, customer value-added, competitive advantage and others.

¹⁰⁶ Lloria (2008).

¹⁰⁷ Lloria (2008: 79).

Lloria¹⁰⁸ found that, although the importance of knowledge management is widely agreed upon, different countries have taken diverging directions – European countries have been concerned with *measuring* knowledge, America focused on the *management* of knowledge whilst in Japan attention was focused on the *creation* of knowledge. With reference to the schools of knowledge management as defined by Earl¹⁰⁹, this would place the economic school in Europe, the technocratic school in America and the behavioural school in Japan.

Lloria refers to Scandinavian organisations like Skandia in Europe that took the lead in developing measurement systems for their intangible assets. These organisations refer to their intellectual capital and human capital in annual reports to illustrate how effectively their intellectual assets are established. They utilise the concepts of human and structural capital to clarify: “Human capital is defined as combined knowledge, skills, capacity to innovate, and even values, culture and company philosophy. Structural capital is defined as hardware, software, databases, organizational structure, patents, brand names and anything that supports the productivity of employees”¹¹⁰.

In America, information technology is used to effectively capture and manage knowledge – knowledge managers are responsible for effectively codifying and storing knowledge assets. This approach is used especially in the service industry where knowledge is regarded as a product.

The Japanese approach is influenced by scholars such as Nonaka¹¹¹ who regards knowledge not only as data and information that can be captured and stored but a concept that includes humans, emotions, intuition and values – organisations should not only manage knowledge but also create knowledge. Nonaka and Takeuchi comment as follows: “There is a reason why Western observers tend not to address

¹⁰⁸ Lloria (2008: 82).

¹⁰⁹ Earl (2001).

¹¹⁰ Lloria (2008: 83).

¹¹¹ Nonaka (1991).

the issue of organizational knowledge creation. They take for granted a view of the organization as a machine for ‘information processing’.¹¹² Castells¹¹³ refers to knowledge creating processes in Japanese firms by stating “some of the most important organizational mechanisms underlying productivity growth in Japanese firms seem to have been overlooked by Western experts of management.... In an economic system where innovation is vital, the organizational ability to increase its sources from all forms of knowledge becomes the foundation of the innovative form”.^{114 115}

Choo also addresses the western versus eastern approaches by comparing the explicit, systematic and formal view to the Japanese approach: “This view is deeply ingrained in the traditions of Western management, from Frederick Taylor to Herbert Simon. And it is a view of knowledge as necessarily “explicit”—something formal and systematic . . . Japanese companies have a very different understanding of knowledge. They recognize that the knowledge expressed in words and numbers represents only the tip of the iceberg. They view knowledge as being primarily “tacit”—something not easily visible and expressible. Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others”.^{116 117}

¹¹² Nonaka & Takeuchi (1995: 8).

¹¹³ Castells (2000).

¹¹⁴ Castells (2000: 171).

¹¹⁵ Castells present a substantial argument in comparing American “Fordism” in manufacturing processes with what he terms “Toyotism” in Japan.

¹¹⁶ Choo (2003: 211).

¹¹⁷ Choo (2003) extended the cultural approach to gender as well stating that the more systematic “management” of knowledge can be compared to a “masculine” view and the softer “feminine” approach that enhanced collaboration and sharing.

1.12. Generational or Historical Typologies

1.12.1. Three Ages, Stages or Generations

Snowden¹¹⁸ distinguishes between three generations, stages or “ages” of knowledge management. In the first generation knowledge management (prior to 1995), the emphasis is on information, information management, the flow of information and the use of technology. In this phase the concept of knowledge is not problematic, knowledge management is closely related to information management and it can be seen as information in support of decisions. This first generation of knowledge management was closely aligned with Business Re-engineering and, as Snowden puts it “the desire to capture and imbed knowledge into processes in the interests of efficiency”.¹¹⁹

The second generation, according to Snowden started in 1995 with Nonaka and Takeuchi’s SECI model and their views about the movement of knowledge between tacit and explicit states in their model.¹²⁰ (As discussed in paragraph 1.10)

The third generation focuses on complexity, organisations as complex adaptive systems, contexts, the human element, sense making theory, the flow of knowledge and knowledge paradoxically being a “thing” as well as a “flow”.

Koenig¹²¹, like Snowden, has a three stage view of knowledge management. The first stage was primarily driven by Information Technology and he uses an equestrian metaphor in naming this stage "by the Internet out of intellectual capital."¹²². The second stage recognised the human and cultural dimensions involved. Like Snowden, Koenig also refers to Nonaka et al in terms of the second stage. The third, according

¹¹⁸ Snowden (2002).

¹¹⁹ Snowden (2000: 51).

¹²⁰ The approach of Nonaka is addressed in more detail in paragraph 1.10

¹²¹ Koenig (2002).

¹²² Koenig (2002).

to Koenig is an awareness of content "The third stage is the awareness of the importance of content—and, in particular, an awareness of the importance of the retrievability and therefore of the arrangement, description and structure of that content".¹²³

From both Snowden and Koenig's perspectives these generations did not replace each other but rather built on and added new dimensions to the existing views¹²⁴.

Metaxiotis et al¹²⁵ also provides a three generations typology. According to them the first generation of Knowledge Management started in the period 1990 – 1995 focusing on the definition of Knowledge Management, to identify potential benefits to organisations and to design Knowledge Management projects. During this period, progress with artificial intelligence also impacted on the interest in Knowledge Management.

The second generation started in 1996 with the emergence of roles within organisations, a focus on definitional elements, frameworks, processes, practices, technologies and strategies – “on a more practical level, second-generation KM emphasized that KM is about systemic organizational change where management practices, measurement systems, tools and content management needed to be co-developed”.¹²⁶

The third generation of Knowledge Management is based on the results of the second generation and is more focused on change management and incorporating Knowledge Management as an integral part of the organisations' strategies. This view relates to what Wigg refers to as the New Generation Knowledge Management (NGKM): “One difference from earlier KM generations is the degree to which NGKM is integrated

¹²³ Koenig (2002).

¹²⁴ Wilson (2002). Wilson provides some interesting facts about citations on the Web of Science and the amount of journal articles dealing with the concept of knowledge management in the period 1986 – 2002. This analysis provides some context to the 3 stages scenario.

¹²⁵ Metaxiotis et al. (2005).

¹²⁶ Metaxiotis et al. (2005: 7).

with the enterprise's philosophy, strategy, goals, practices, systems, and procedures and how it becomes part of each employee's daily work-life and motivation. Furthermore, NGKM is different because of its concerns for the overall enterprise performance and its emphasis on utilizing all available scientific and professional insights to provide the best possible KM support for the enterprise. These differences lead NGKM practitioners to pursue KM approaches that are systematically combined with all other practices and activities, both within the enterprise and in interactions with all outside parties".¹²⁷

1.12.2. Two Generations

Firestone and McElroy¹²⁸ propose a two generations view: The first generation is referred to as "supply side KM"¹²⁹, focused on sharing and can be summarised as "integrating (supplying) previously created knowledge through sharing and other integrative activities.... it's all about capturing codifying and sharing valuable knowledge...it's all about getting the right information to the right people at the right time".¹³⁰

By the mid 1990's the second generation Knowledge Management starts appearing, this generation focuses not only on the "supply side" but also on the "demand side knowledge processing or knowledge making".¹³¹ These authors are critical of the view of Koenig¹³² and Snowden¹³³ and it is this criticism that leads them to the statement that knowledge is the outcome of a process and thus a "thing" that can be managed.

¹²⁷ Wiig (2002: 5).

¹²⁸ Firestone & McElroy (2003).

¹²⁹ Firestone & McElroy (2003: 89).

¹³⁰ Firestone & McElroy (2003: 89).

¹³¹ Firestone & McElroy (2003: 89).

¹³² Koenig (2002).

¹³³ Snowden (2002).

Although not mentioned by Snowden, Koenig, Firestone or McElroy, one could add a fourth stage or age based on what Tsoukas and Mylonopoulos¹³⁴ describes as *organisations as knowledge systems*. This view expands the knowledge from personal to collective and moves beyond the normal discourse about information and knowledge. “Viewing organizations as knowledge systems makes us realize that the locus of individual understanding is not so much in the head as in situated practice: the individual understands and acts in the world through drawing on sets of socially defined values, beliefs and cognitive categories within material and social circumstances..... such a perspective views individuals not merely as information processors (the human analogues of a computer but as situated practical thinkers)”¹³⁵ The latter represents a specific move to and focuses on *collective understanding* and *collective interpretation*. It leads to the conclusion that all organizational work involve knowledge and that “the knowledge an organizational member possesses does not so much consists of a finite set of pieces of information as of a constantly developing set of generalizations, collective understandings and experiences”¹³⁶.

This typology based on stages or ages, including a proposed 4th stage based on organisations as knowledge systems, is summarised in Figure 5:

¹³⁴ Tsoukas & Mylonopoulos (2004).

¹³⁵ Tsoukas & Mylonopoulos (2004: 7).

¹³⁶ Tsoukas & Mylonopoulos (2004: 11).

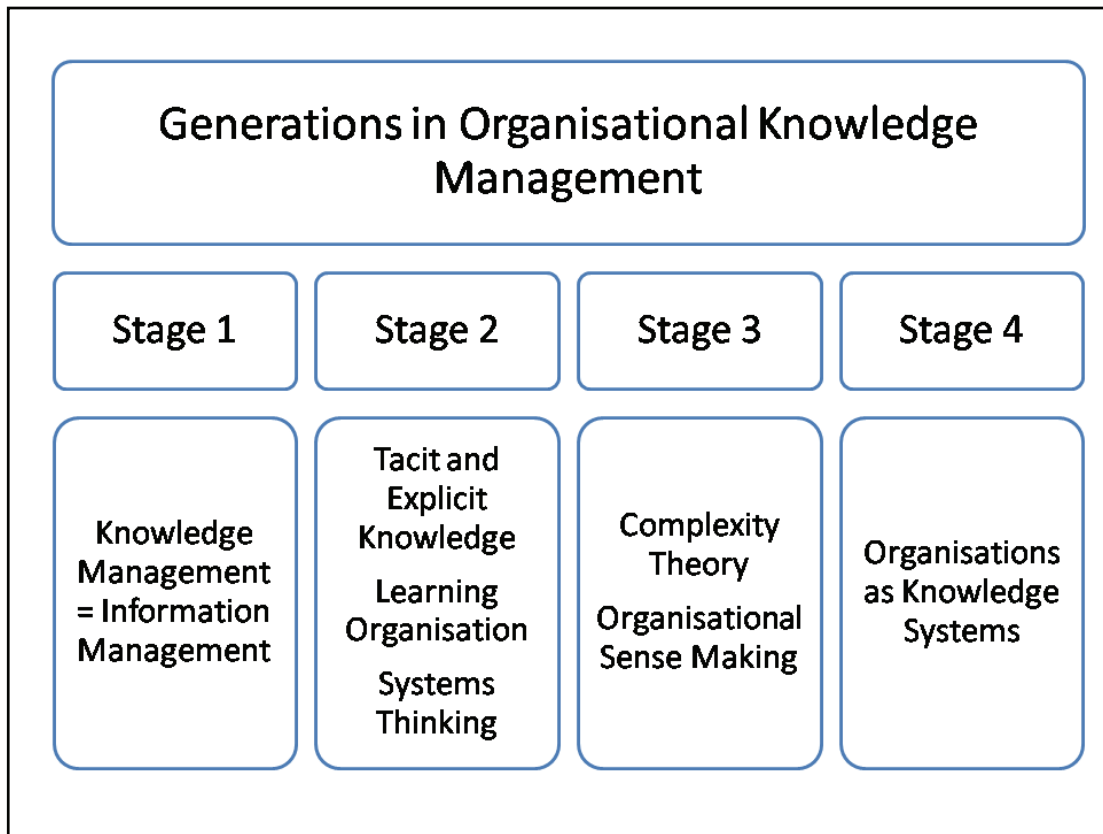


Figure 5: Stages in Organisational Knowledge Management

Appendix A (page 132) contains a list of definitions or approaches to the concept of knowledge and knowledge management evaluated against the generational stages outlined in Figure 5.

1.13. Stacey’s “Mainstream Thinking” Classification

Although Stacey¹³⁷ does not provide a generational classification per se, he deals in detail with what he refers to as “mainstream” thinking in organisational knowledge management *classifying* specific views in the literature.

For purposes of this section, three issues which are raised by Stacey will be addressed¹³⁸, namely:

¹³⁷ Stacey (2001).

- The split between individual and organisational,
- Tacit and explicit; and
- Information processing.

1.13.1. The Split between Individual and Organisational

In what Stacey classifies as mainstream thinking, there is a split between the individual and the organisation (or social) - “It is usually explicitly stated that it is individuals who learn and create knowledge, although this is almost always coupled with an emphasis on the importance of the teams within which that individual learning takes place. A key question arises as to whether a team, group or organization can be said to learn or whether it is the individual members of the team, group or organization who do so. In the mainstream thinking, in the end, it is usually individuals who learn and create knowledge and the principle concern from an organisational perspective is then how that individual learning and knowledge might be shared across the organization and how it might be captured, stored and retained by the organization.”¹³⁹

Cook and Brown¹⁴⁰ address the same issue by stating “Much current work on organizational knowledge, intellectual capital, knowledge – creating organizations, knowledge work and the like rests on a single understanding of the nature of knowledge. We call this the epistemology of possession since it treats knowledge as something people possess. Yet this epistemology cannot account for the knowing

¹³⁸ Stacey provides a detailed overview and critique of mainstream thinking and identifies 10 assumptions based on the current views of knowledge and knowledge creation. He links current views to systems thinking and states that although there are various views, various approaches and a number of disciplines involved, most current views can be linked to the same frame of reference (that of systems thinking). Stacey regards the split between individual and social as a severe limitation in investigating knowledge creation. Stacey also refers to Weick (1995) in terms of the challenges to mainstream thinking that will be explored further in Chapter 4.

¹³⁹ Stacey (2001: 15).

¹⁴⁰ Cook & Brown (1999).

found in individual and group practice¹⁴¹”. Tsoukas¹⁴² expands on this view by pointing out that there is a tendency to equate knowledge with individual knowledge but it is not evident how knowledge actually *becomes* a possession.

1.13.2. Tacit and Explicit

The second mainstream issue addressed by Stacey¹⁴³ is transmission of knowledge and the distinction between explicit and tacit knowledge (explicit as formalised systematic knowledge easy to transfer and tacit as in the minds of people, subjective and difficult to formalise and communicate). New knowledge is created from this transmission and conversion from tacit to explicit. The assumption is that knowledge takes either a tacit or explicit form and that knowledge creation is a system of flow between these categories. This mainstream phenomena then leads to knowledge in a “sender – receiver” mode of transmission and leads to “prescriptions” for managing individuals with tacit knowledge.

There are various issues related to the principle of converting tacit to explicit and the interaction between tacit and explicit knowledge¹⁴⁴. According to Tsoukas¹⁴⁵, the concept of tacit knowledge has been conceived, in management studies as in opposition to explicit knowledge but these are in fact two sides of the knowledge coin and tacit knowledge is simply the other side of explicit knowledge. Alavi et al also comments on this element. "One potentially problematic aspect in the interpretation of

¹⁴¹ Cook & Brown (1999: 381).

¹⁴² Tsoukas (2005).

¹⁴³ Stacey (2000).

¹⁴⁴ Given the relevance to the subject, some issues (related to managing tacit knowledge as well as transforming tacit to explicit) are mentioned here – it is not presented as an overview of this debate since that would require a study of its own. The elements are, however, important if one regards explicit as “thing” and tacit as “flow” in the context of this thesis.

¹⁴⁵ Tsoukas (2005).

this classification is the assumption that tacit knowledge is more valuable than explicit knowledge."¹⁴⁶

Hildreth and Kimble¹⁴⁷ refer to the transformation of tacit to explicit as a flaw since tacit knowledge is regarded as inarticulable, it cannot be practically pursued. They also refer to the fact that tacit knowledge can vary from one situation to another: "For example when reading a text, words and linguistic rules function as tacit subsidiary knowledge while the attention of the reader is focused on the explicit meaning of the text. In another situation, those same linguistic rules might become explicit knowledge. Although under certain circumstances tacit knowledge can become explicit, it is perhaps more accurate to say that even then only part of what is tacit is made explicit. This is because even what we normally think of as explicit knowledge has a whole history of culture, conventions of language and cross-referencing of thought that is never made explicit. There is always a significant amount that is embedded, implied, assumed and presupposed than can ever be externalised and made explicit. In practice, the tacit and explicit dimensions to knowledge are inexorably and inextricably interwoven¹⁴⁸.

Swan et al go further: "Therefore attempts to codify tacit knowledge may only produce knowledge which is: useless (if it is too difficult to explain); difficult to verify (if it is too uncertain); trivial (if it is too unimportant); redundant (if it is subject to continuous change); irrelevant to a wider audience (if it is too context dependent); politically naïve (if it is too politically sensitive); inaccurate (if it is too valuable and is therefore secreted by the "knower"). Tacit knowledge, therefore, cannot easily be articulated or transferred in explicit forms because it is personal and context-specific."¹⁴⁹

¹⁴⁶ Alavi & Leidner (2001: 111).

¹⁴⁷ Hildreth & Kimble (2002).

¹⁴⁸ Hildreth & Kimble (2002).

¹⁴⁹ Swan et al. (1999: 264).

Snowden ¹⁵⁰ remarks as follows on the restrictions of transforming tacit to explicit: "In particular, organizations are increasingly realizing that there is a body of tacit knowledge that cannot be made explicit, and that even much of what can be made explicit shouldn't be, on grounds of either cost or flexibility."¹⁵¹

1.13.3. Information Processing

The third issue relates to the assumptions that "the human brain makes representations of a pre-given external reality and forms them into neural maps that are stored and later retrieved to process subsequent data Individual mind is a function of the individual brain consisting of representations of reality structured into mental models" and "Mental contents are translated into language and transmitted to others so that they can be shared through the process of mimicry".¹⁵² These assumptions lead to a more simplistic view of information processing where individuals make a representation, store it, retrieve it and share it. It also does not take into account that individuals can distort reality in their minds and that it is not always a true representation of reality."

In this regard it is important to note Von Krogh's¹⁵³ explanation of the cognitive school of knowledge: "Knowledge was considered to be representations of the world that consist of a number of objects or events, and the key task of the brain (or any cognitive system) was to represent or model these as accurately as possible. Knowledge was universal; two cognitive systems should achieve the same representations of the same object or event. "Learning" meant the development of increasingly complete representations, and one knew that the cognitive system worked when its representations corresponded to the objects or events "out there."¹⁵⁴

¹⁵⁰ Snowden (2000).

¹⁵¹ Snowden (2000: 52).

¹⁵² Stacey (2001: 29).

¹⁵³ Von Krogh (1998).

¹⁵⁴ Von Krogh (1998: 134).

The views of Stacey on mainstream thinking are also echoed by Sorensen and Kakihara¹⁵⁵ (citing Aadne et al.¹⁵⁶ to comment on the characteristics of Representationalism) – “Representationalism is a fairly traditional approach for understanding organizational knowledge in contemporary management studies. A representationist view on knowledge is based on the following assumptions

- Knowledge is seen as a representation of a pre-given world
- Human intelligence can be seen as information processing and rule-based manipulation of symbols
- Knowledge results from human beings ‘performing’ information processing
- Knowledge is seen as objectified and transferable
- Learning is thought of as creation of the most accurate or “truthful” representations of the objective world”.

1.14. Embedded as Thing, Embodied as Flow

Blacker¹⁵⁷, based on the work of Collins¹⁵⁸, presents a classification of knowledge types as embodied, embrained, embedded, encoded and encultured.

1.14.1. Embodied

Embodied knowledge is action orientated and only partly explicit. This type of knowledge is “individual – tacit”¹⁵⁹ It represents the “know-how” of the individual. The “know-how” of individuals related to Knowledge Management is described by the Organisation for Economic Cooperation and Development (OECD) as follows:

¹⁵⁵ Sorensen & Kakihara (2002: 1).

¹⁵⁶ Aadne et al. (1996: 38) cited in Sorensen & Kakihara (2002: 1).

¹⁵⁷ Blacker (1995).

¹⁵⁸ Collins (1993).

¹⁵⁹ Lam (1998: 9).

“Know-how refers to skills or the capability to do something. Businessmen judging market prospects for a new product or a personnel manager selecting and training staff have to use their know-how. The same is true for the skilled worker operating complicated machine tools. Know-how is typically a kind of knowledge developed and kept within the border of an individual firm. One of the most important reasons for the formation of industrial networks is the need for firms to be able to share and combine elements of know-how.”¹⁶⁰

1.14.2. Embedded

Embedded is knowledge that resides in systemic routines. "Embedded knowledge is analyzable in system terms, the relationship between, for example, technologies, roles, formal procedures and emergent routines".¹⁶¹ Lam states: “Embedded knowledge is organic and dynamic; it is an emergent form of knowledge capable of supporting complex patterns of interaction in the absence of written rules. It is, however, also 'sticky' and ‘path dependent’: its generation and application can be constrained by the established organising principles and patterns of social relations”.¹⁶²

Embedded knowledge can be linked, according to Lam to communities of practice and can thus also relate to “know-who” as described by the OECD as “Know-who involves information about who knows what and who knows how to do what. It involves the formation of special social relationships which make it possible to get access to experts and use their knowledge efficiently. It is significant in economies where skills are widely dispersed because of a highly developed division of labour among organisations and experts. For the modern manager and organisation, it is important to use this kind of knowledge in response to the acceleration in the rate of

¹⁶⁰ OECD (1996: 14).

¹⁶¹ Blacker (1995: 1024).

¹⁶² Lam (1998: 11).

change. The know-who kind of knowledge is internal to the organisation to a higher degree than any other kind of knowledge.”¹⁶³

1.14.3. Embrained

Embrained is knowledge that is dependent on conceptual skill and cognitive abilities. According to Lam, embrained knowledge is individually explicit, this type of knowledge can be “acquired primarily through formal education and training, in other words ‘learning-by-studying’”.¹⁶⁴ This type of knowledge can relate to the “know what” of individuals, described by the OECD as “Know-what refers to knowledge about “*facts*”. How many people live in New York? What are the ingredients in pancakes? And when was the battle of Waterloo? are examples of this kind of knowledge. Here, knowledge is close to what is normally called information – it can be broken down into bits. In some complex areas, experts must have a lot of this kind of knowledge in order to fulfil their jobs. Practitioners of law and medicine belong to this category.”¹⁶⁵

1.14.4. Encultured

Encultured refers to the process of achieving shared understandings. Here we are dealing with cultural meaning systems that are constructed within the organisation. Encultured knowledge is linked to socialisation as well as language.¹⁶⁶

1.14.5. Encoded

Encoded knowledge is information conveyed by signs and symbols. This type of knowledge is collective explicit accessible to the wider organisation.¹⁶⁷

¹⁶³ OECD (1996: 14).

¹⁶⁴ Lam (1998: 10).

¹⁶⁵ OECD (1996: 14).

¹⁶⁶ Collins (1993).

¹⁶⁷ Lam (1998).

1.15. Procedural as Thing, Declarative as Flow

Zack¹⁶⁸ provides a typology of Declarative, Procedural and Causal: "Declarative knowledge is about describing something. A shared, explicit understanding of concepts, categories, and descriptors lays the foundation for effective communication and knowledge sharing in organizations. Procedural knowledge is about how something occurs or is performed. Shared explicit procedural knowledge lays a foundation for efficient coordinated action in organizations. Causal knowledge is about why something occurs. Shared explicit causal knowledge, often in the form of organizational stories, enables organizations to coordinate strategy for achieving goals or outcomes."¹⁶⁹

This typology relates to the view of Tsoukas that organisational knowledge is three things at once: "First, it is personal knowledge. As members of organizations, individuals draw distinctions in the course of their work; select what they take to be the relevant aspects of both the context within which their actions take place and the tradition within which they are embedded; decide how strong the analogy between current and past instances is. Secondly, organizational knowledge is propositional. Propositional statements explicitly articulating the tasks of an organization to guide individual action. And thirdly, organizational knowledge is collective (or cultural)¹⁷⁰".

1.16. Hard as Thing, Soft as Flow

Hildreth and Kimble¹⁷¹ distinguish between 'hard' and 'soft' knowledge. Hard knowledge can be quantified, codified and stored. Soft knowledge is described as less quantifiable and something that cannot easily be captured and stored.

¹⁶⁸ Zack (1999).

¹⁶⁹ Zack (1999: 46).

¹⁷⁰ Tsoukas (2000: 110).

¹⁷¹ Hildreth & Kimble (2002).

1.17. Procedural, Specific and Abstract

Fowler¹⁷² proposes a broader classification than tacit and explicit and includes procedural, specific and abstract with overlaps and clustering as illustrated in Figure 6:

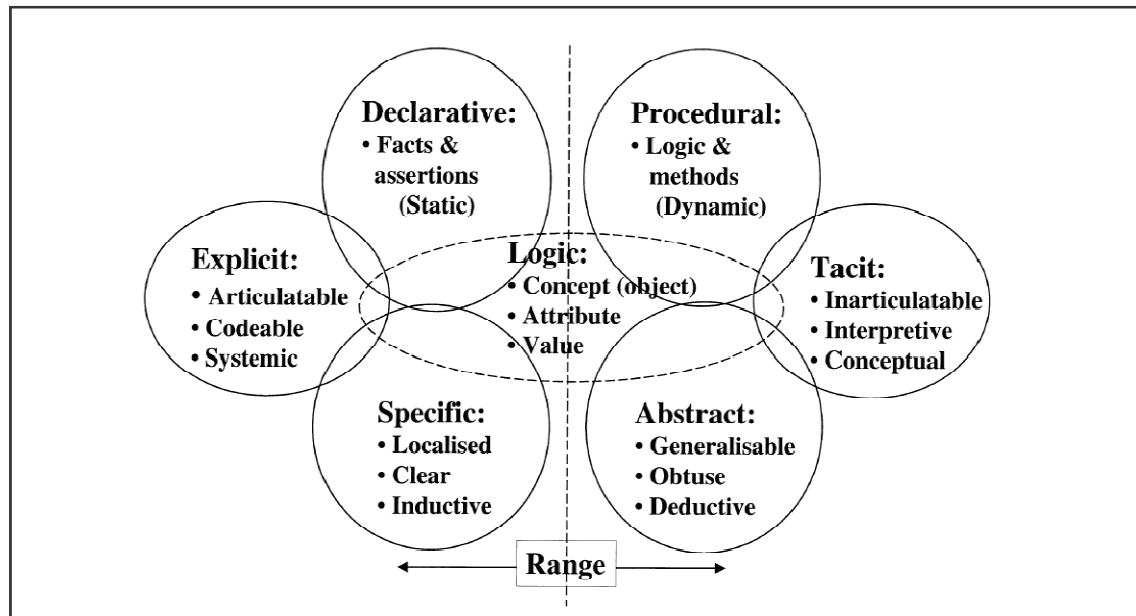


Figure 6: Typology as proposed by Fowler¹⁷³

Fowler uses this model in investigating how Artificial Intelligence can be used in Technology Systems to assist with Knowledge Management. This typology is based on the changing nature of knowledge: "Whenever procedural knowledge is revised or refreshed, behaviour and practice are modified in response. In sum, organizations do not practice information, they practice knowledge. And knowledge is forever changing".¹⁷⁴

¹⁷² Fowler (2000).

¹⁷³ Fowler (2000: 109).

¹⁷⁴ McElroy (2000: 201).

1.18. Institutional as Thing, Fluid as Flow

Graham and Pizzo provide a typology of “fluid and institutional” - “the ability to balance creative activities that cultivate the raw materials of the mind with the disciplined execution needed to transform good ideas into valuable goods.”¹⁷⁵ There is a balance needed between fluid spontaneous creativity on the one end of the scale and goals, controls and accountability on the other as illustrated in Figure 7. This typology can be viewed as the two ends of the spectrum of “schools of Knowledge Management” as proposed by Earl¹⁷⁶ (see paragraph 1.9).

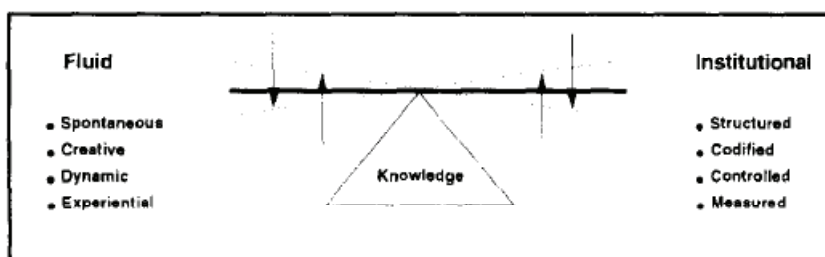


Figure 7: Fluid and Institutional Knowledge¹⁷⁷

1.19. Jigsaw as Thing, Kaleidoscope as Flow

Swan et al¹⁷⁸ distinguish between a cognitive network model and a community networking model in relation to knowledge and innovation. The cognitive network view holds knowledge as an artefact and the community networking model view regards knowledge as socially constructed. The metaphor used for the cognitive model is the human memory and the jigsaw (fitting pieces of knowledge together to produce a bigger picture in predictable ways) whilst the community model’s metaphor is the human community and the kaleidoscope (creative interactions producing new

¹⁷⁵ Graham, & Pizzo (1996: 338).

¹⁷⁶ Earl (2001).

¹⁷⁷ Graham, & Pizzo (1996: 339).

¹⁷⁸ Swan et al. (1999).

knowledge in sometimes unpredictable ways). The differences between these models are illustrated in Figure 8:

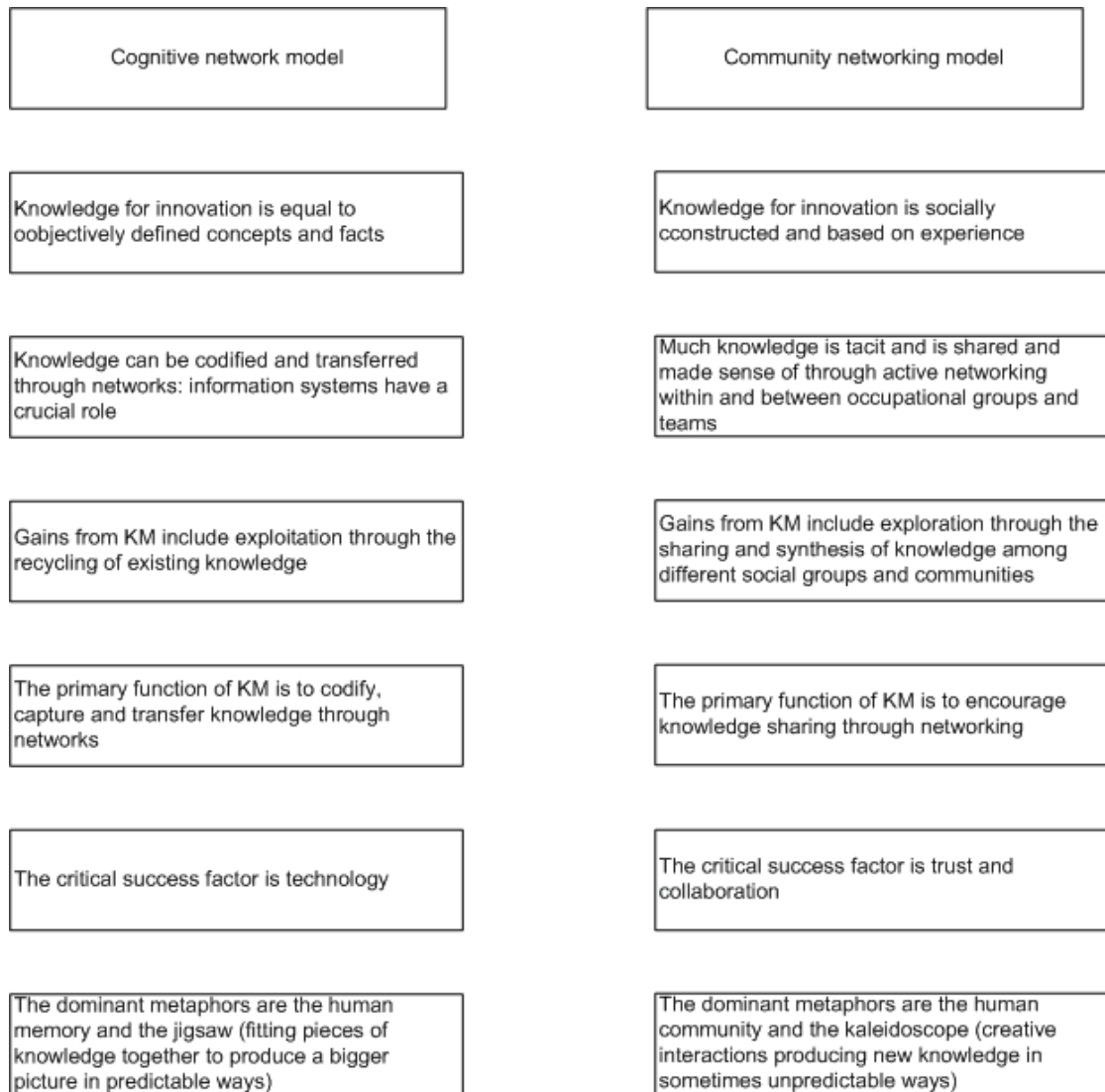


Figure 8: Cognitive Network and Community Networking ¹⁷⁹

1.20. Conclusion: Chapter 2

All of the classifications used seem to indicate two main approaches – one the one hand there is “Knowledge *MANAGEMENT*” where the emphasis is on the structured nature of knowledge, the importance of codification, the critical role of information

¹⁷⁹ Swan et al. (1999).

technologies and the transferability of knowledge. On the other hand we have “*KNOWLEDGE* Management” where the emphasis is on complexity, the personal nature of knowledge, the importance of knowledge creation and innovation, the social nature of knowledge and building shared contexts for knowledge creation.

Chapter 3:

Knowledge as Object

2.1. Introduction

In their book *Working Knowledge: How organizations manage what they know*, Davenport and Prusak describe the aim of the book as follows: “Our primary aim in this book is to develop a preliminary understanding of what knowledge is within organizations. How does it look and sound in daily life and work? How is it different from data and information? Who has it? Who uses it? What do we talk about when we talk about knowledge? Our second concern is what to do about knowledge. What key cultural and behavioural issues must we address to make use of it? What are the best ways to use technology in knowledge work?”¹⁸⁰

This chapter will focus on five important elements outlined in these objectives, namely:

- The authors’ approach to the concept of knowledge;
- The introduction of the concept of knowledge markets;
- The differences between data information and knowledge;
- The generation of knowledge;
- Aspects related to knowledge acquisition, codification and management.

2.2. Approach to the Concept of Knowledge

Davenport and Prusak define knowledge as “a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating

¹⁸⁰ Davenport and Prusak (1998: xx).

and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.”¹⁸¹

The definition is widely cited in the literature^{182 183} and can be regarded as a practical approach to managing knowledge.

In their definition, knowledge is:

- A state of mind (experience, values, insight and the mind of knowers); as well as;
- A discrete item that becomes embedded within organisations’ routines, practices, processes, repositories, documents and norms.

The definition aims to address the complex nature of knowledge (to indicate that knowledge is not “neat or simple”¹⁸⁴; it includes elements that indicate the fluid nature of knowledge, the structured nature of knowledge, that it exist within individuals and thus is part of human complexity.

The definition contains elements related to knowledge as manageable item and knowledge as flow or process. The authors compare knowledge to an atomic particle that can appear to be either a wave or a particle – similarly knowledge can be seen as both process and stock.

¹⁸¹ Davenport & Prusak (1998: 5).

¹⁸² Popadiuk & Choo (2006); Tsoukas (2005); Firestone & McElroy (2003).

¹⁸³ Choo (2003) searched the Social Science Citation Index database for articles with a primary focus on knowledge management. His data suggest that Ikujiro Nonaka and Thomas Davenport are the two most often cited authors. Each of their books, *The Knowledge Creating Company* by Nonaka and Takeuchi and *Working Knowledge* by Davenport and Prusak offers a comprehensive framework on how organisations should manage their knowledge.

¹⁸⁴ Davenport & Prusak (1998: 5).

Since one of the overall objectives of their work is to address the value of managing knowledge in organisations, the authors lean towards knowledge as manageable item - “Explicitly recognizing knowledge as a corporate asset is new, however, as is understanding the need to manage and invest it with the same care paid to getting value from other, more tangible assets.”¹⁸⁵ This view correlates with the view of Gupta et al. who state that “Organizations are beginning to realize that there is a vast and largely untapped asset diffused around in the organization knowledge. KM emerged with not only the need to be cost-efficient and managerially effective in problem solving, decision making, innovation and all other elements needed to maintain and develop a competitive edge, but also more specifically, to capture, catalogue, preserve, disseminate the expertise and knowledge that are part of organizational memory that typically resides within the organization in an unstructured way”.¹⁸⁶

In terms of the concepts and typologies of knowledge as discussed in Chapter 2, the definition by Davenport and Prusak contains elements of tacit and explicit, embodied and embedded, fluid and institutional and therefore it addresses various perspectives on knowledge. Xu and Quaddus¹⁸⁷ and Chen and Chen¹⁸⁸ cite Alavi and Leidner¹⁸⁹ in terms of various perspectives on knowledge, namely:

- Knowledge is a state of mind – the state of knowing and understanding gained through experience and learning (addressed in the Davenport and Prusak definition and explicitly stated as: “Knowledge develops over time, through

¹⁸⁵ Davenport & Prusak (1998: 12).

¹⁸⁶ Gupta et al. (2000: 17).

¹⁸⁷ Xu & Quaddus (2005: 294-295).

¹⁸⁸ Chen & Chen (2006).

¹⁸⁹ Alavi & Leidner (2001).

experience that includes what we absorb from courses, books, and mentors as well as informal learning).”¹⁹⁰

- Knowledge is an object to be stored and manipulated (as described by Davenport and Prusak: “The aim of codification is to put organizational knowledge into a form that makes it accessible to those who need it. It literally turns knowledge into a code (though not necessarily a computer code) to make it as organized, explicit, portable, and easy to understand as possible.”¹⁹¹
- Knowledge is a process of applying expertise and a capacity to influence action (as stated by Davenport and Prusak: “Knowledge works through rules of thumb: flexible guides to action that developed through trial and error and over long experience and observation)”¹⁹²

The definition of Davenport and Prusak corresponds to the definition by Wigg¹⁹³ who states that the objectives of KM are:

- To make the enterprise act as intelligently as possible to secure its viability and overall success.
- To otherwise realize the best value of its knowledge assets.

Wigg identifies the following four areas of emphasis:

- Top-down monitoring and facilitation of knowledge-related activities;
- Creation and maintenance of knowledge infrastructure;
- Renewing organizing and transforming knowledge assets;
- Leveraging (using) knowledge assets to realize their value.

¹⁹⁰ Davenport & Prusak (1998: 7).

¹⁹¹ Davenport & Prusak (1998: 68).

¹⁹² Davenport & Prusak (1998: 10).

¹⁹³ Wigg (1997c:1); Wigg (1997a: 8)

There are also parallels with Bhatt: “It is well agreed that knowledge development processes in organizations differ substantially. Organizations use a combination of strategies toward knowledge creation, knowledge adoption, knowledge distribution, and knowledge review and revision processes. Some of these strategies are for knowledge assimilation, some others are for knowledge controls, and some others are for knowledge applications”.¹⁹⁴

Jakubik¹⁹⁵ classifies the definition of knowledge by Davenport and Prusak as a “commodity” view of knowledge. According to Jakubik, who state that this view of knowledge “has an epistemologically objective assumption, i.e. “knowledge is an objectively definable commodity””.¹⁹⁶

According to Tsoukas¹⁹⁷, the Davenport and Prusak definition does not clearly differentiate between information and knowledge: “While this definition correctly highlights the dynamic character of knowledge (i.e. knowledge is both an outcome – ‘a framework’ – and a process for incorporating new experience and information), it is not clear in what sense knowledge is different from information”¹⁹⁸, Tsoukas also questions the inclusion of elements like values, experiences and contexts, suggesting that there are too many elements packed into the concept, making it too broad.

The lack of distinction between knowledge and information is also highlighted by Firestone and McElroy¹⁹⁹ since, according to them “it ignores the role of testing and evaluating knowledge claims in distinguishing knowledge from information”.²⁰⁰

¹⁹⁴ Bhatt (2000: 15).

¹⁹⁵ Jakubik (2007).

¹⁹⁶ Jakubik (2007: 12).

¹⁹⁷ Tsoukas (2005).

¹⁹⁸ Tsoukas (2005: 118).

¹⁹⁹ Firestone & McElroy (2003).

²⁰⁰ Firestone & McElroy (2003: 15).

This general (complex) dilemma of defining knowledge in differentiating it from information is succinctly summed up by Spiegler: “Knowledge is that slippery and fragile thing or process we have a hard time defining. It has the curious characteristic of changing into something else when we talk about it...This hide-and-seek notion of knowledge may partially explain why, when we attempt to capture, record or store knowledge – it turns back into information or data”²⁰¹.

2.3. Knowledge Markets

Davenport and Prusak²⁰² introduce the concept of “knowledge markets”, operating similar to commodity markets with knowledge buyers, sellers and brokers. People searching for knowledge will buy knowledge and when people supply knowledge to buyers they want something in return – it is an exchange of a scarce commodity. This marketable nature of knowledge is an important element in managing knowledge since knowledge does not flow without reason or motivation. The acknowledgement of the knowledge market within an organisation is, according to Davenport and Prusak “the first step in any knowledge initiative”.²⁰³ Implementation of technology to aid the flow of knowledge within an organisation will not automatically bring the flow of knowledge to the fore – it is the knowledge market that brings about the flow of knowledge within an organisation.

Cohen²⁰⁴ refers to the knowledge market as proposed by Davenport and Prusak as one of the distinguishing features of Western approaches to knowledge management – the approach of “markets” are compared to the Eastern notion of “communities” rather than markets.

²⁰¹ Spiegler (2000: 9).

²⁰² Davenport & Prusak (1998: 25).

²⁰³ Davenport & Prusak (1998: 26).

²⁰⁴ Cohen (1998).

2.3.1. Knowledge Buyers

Knowledge buyers are people confronted with issues and that seek insight and understanding to solve these issues. The buyers of knowledge do not want simple data; they are looking for complex answers – answers that can assist them to be more efficient. The knowledge that they seek will have a distinct value to them; improving their judgement and making them more successful. The task of searching for knowledge is, according to Davenport and Prusak²⁰⁵, a fairly substantial part of what managers and executives actually do.

2.3.2. Knowledge Sellers

Knowledge Sellers are people within an organisation with a reputation (and market reputation) for owning important knowledge about customers, products, processes and other important organisational issues. Although everyone in an organisation might be a knowledge buyer at some stage, not everyone becomes a knowledge seller. Some people are unable to communicate their tacit knowledge or do not have the necessary knowledge to make them important in the knowledge market. With knowledge sellers, knowledge also becomes a political tool within the organisation since knowledge is power – this political aspect of the market needs to be taken into account by managers involved in knowledge initiatives by rewarding the sharing of knowledge to guard against the possible hoarding of knowledge as part of organisational politics.

2.3.3. Knowledge Brokers

Similar to economic markets, brokers bring buyers and sellers together. Davenport and Prusak refer to brokers as “gatekeepers” or “boundary spanners” linking those who need knowledge and those who have it.”²⁰⁶

Knowledge brokers like to explore the organisation, know the bigger picture and can assist buyers since they know where to look for knowledge. Librarians are regarded as

²⁰⁵ Davenport & Prusak (1998).

²⁰⁶ Davenport & Prusak (1998: 29).

important knowledge brokers in organisations since they serve the whole organisation; know what people search for and have a thorough grasp of what the knowledge needs of people in an organisation are.

2.3.4. The Pricing System in the Knowledge Market

Like economic markets, there is a price system in the knowledge market; there are currency, transactions and market conditions involved. Since knowledge sellers, buyers and brokers all have something to gain; the three types of currency are reciprocity, repute and altruism (all held together by trust).

A knowledge seller will be prepared to spend time and effort to assist a buyer if he/she feels that buyer will assist them in future when they have a need to gain knowledge. This reciprocity is linked to repute since the seller by providing knowledge will be known as a willing sharer of knowledge to others in the organisation. The willingness to share could also have other benefits to the seller such as job security or rewards. Some knowledge sharers are motivated by altruism and will share knowledge for the greater good, for the love of their subject or just as a sense of helping others. Mentoring could be seen as an example of altruistic sharing of knowledge.

Knowledge markets cannot succeed without trust and according to Davenport and Prusak²⁰⁷, this trust must be visible (members of the organisation must see people getting rewarded for knowledge sharing), must be ubiquitous (if a part of the market is untrustworthy, the market is not efficient) and the trustworthiness must start at the top (based on the trustworthiness of top management). Trust is the vehicle to maintain the knowledge market since it represents the binding nature of the agreements on buying and selling.

²⁰⁷ Davenport & Prusak (1998).

2.3.5. Signals in the Knowledge Market

The knowledge market needs pointers to areas where knowledge exists in the organisation and how to gain access to these areas of knowledge. Formal indicators are normally the positions of people within an organisation or the education of the people within these positions. Informal indicators of the existence and accessibility of information are informal networks in the organisation and communities of practice. Within informal networks people ask others who knows, who have previously sold knowledge and who brokers knowledge.

2.3.6. Inefficiencies in Knowledge Markets

According to Davenport and Prusak, “Markets for knowledge, however, are notably inefficient in most organizations. The right seller is often hard to locate and can be hard to reach even if we know the location. It is also difficult if not impossible to judge the quality of the knowledge before we purchase it. Both the knowledge value and the eventual payment are uncertain”.²⁰⁸ The authors mention the market for new cars, by way of example, where there are publications, market evaluations, comparisons on vehicles, sellers, where to get them, how much it costs, the ability to test drive vehicle and other factors. In comparison, the knowledge market is murky, the value is not always known in advance and the payment terms are unclear. To enhance the efficiency of the knowledge market, Davenport and Prusak suggest that organisations should address the following elements:

- Incompleteness of information: Knowledge buyers should be guided to find knowledge sellers and information should be available to guide seekers of knowledge.
- Asymmetry of knowledge: Any market will have an element of asymmetry since we are dealing with a scarce resource but strong asymmetry prevents knowledge from getting where it is to where it is needed.

²⁰⁸ Davenport & Prusak (1998: 39).

- The locality of knowledge: Buyers of knowledge will seek sellers close to them within the organisation and sometimes this is not the best knowledge available. The distance between buyer and seller eventuate the transaction not taking place.

2.4. Data, Information and Knowledge

The following represents the views of Davenport and Prusak on data, information and knowledge and thus their distinction between these three elements:

2.4.1. Data

Data is regarded as a set of discrete, objective facts about events. “In an organizational context, data is most usefully described as structured records of transactions.”²⁰⁹

2.4.2. Information

“We will describe it [information] as a message, usually in the form of a document or an audible or visible communication. As with any message, it has a sender and a receiver. Information is meant to change the way the receiver perceives something, to have an impact on his judgment and behavior. It must inform; its data makes a difference.”²¹⁰

2.4.3. Difference between Data and Information

According to Davenport and Prusak one of the main differences is that information has meaning²¹¹. “We transform data into information by adding value in various ways. Let’s consider several important methods, all beginning with the letter C:

- Contextualized: we know for what purpose the data was gathered;

²⁰⁹ Davenport& Prusak (1998:2).

²¹⁰ Davenport& Prusak (1998:3).

²¹¹ Davenport & Prusak (1998:4).

- Categorized: we know the units of analysis or key components of the data;
- Calculated: the data may have been analyzed mathematically or statistically;
- Corrected: errors have been removed from the data;
- Condensed: the data may have been summarized in a more concise form.²¹²

The contextualisation of information and the nature of information “as message” is also emphasised by Zack: "Knowledge is commonly distinguished from data and information. Data represents observations or facts out of context that are, therefore, not directly meaningful. Information results from placing data within some meaningful context, often in the form of a message. Knowledge is that which we come to believe and value on the basis of the meaningfully organized accumulation of information (messages) through experience, communication or inference".^{213 214}

The four C's supports Lang's view that “Knowledge involves “thinking with information”.²¹⁵

2.4.4. Knowledge

“Knowledge derives from information as information derives from data. If information is to become knowledge, humans must do virtually all the work. This transformation happens through such C words as:

- Comparison: how does information about this situation compare to other situations we have known?

²¹² Davenport & Prusak (1998: 4).

²¹³ Zack. (1999: 46).

²¹⁴ The mode of interaction and the “richness” of messages is also an important element in sense making. Daft, Lengel et al. (1987) suggests that equivocal information is best submitted via face-to-face interactions, since this is a more “rich” medium than technology.

²¹⁵ Lang. (2001: 44).

- Consequences: what implications does the information have for the decisions and actions?
- Connections: how does this bit of knowledge relate to others?
- Conversation: what do other people think about this information?”²¹⁶

2.4.5. Difference between Information and Knowledge

Although Davenport and Prusak regard knowledge as related to data and information, one of the reasons why knowledge is valuable is that “it is close and closer than data or information to action.”²¹⁷ Transformed data in the form of information thus leads people to interpret, compare, converse and act. “As organizations interact with their environments, they absorb information, turn it into knowledge, and take action based on it in combination with their experiences, values, and internal rules. They sense and respond.”²¹⁸

Knowledge also contains judgement according to the Davenport and Prusak “Unlike data and information, knowledge contains judgment. Not only can it judge new situations and information in light of what is already known, it judges and refines itself in response to new situations and information. Knowledge can be likened to a living system, growing and changing as it interacts with the environment.”²¹⁹

The view of Davenport and Prusak presents the classic hierarchy of data, information and knowledge as illustrated in Figure 9:

²¹⁶ Davenport & Prusak (1998: 6).

²¹⁷ Davenport & Prusak (1998: 6).

²¹⁸ Davenport & Prusak (1998: 52).

²¹⁹ Davenport & Prusak (1998: 10).

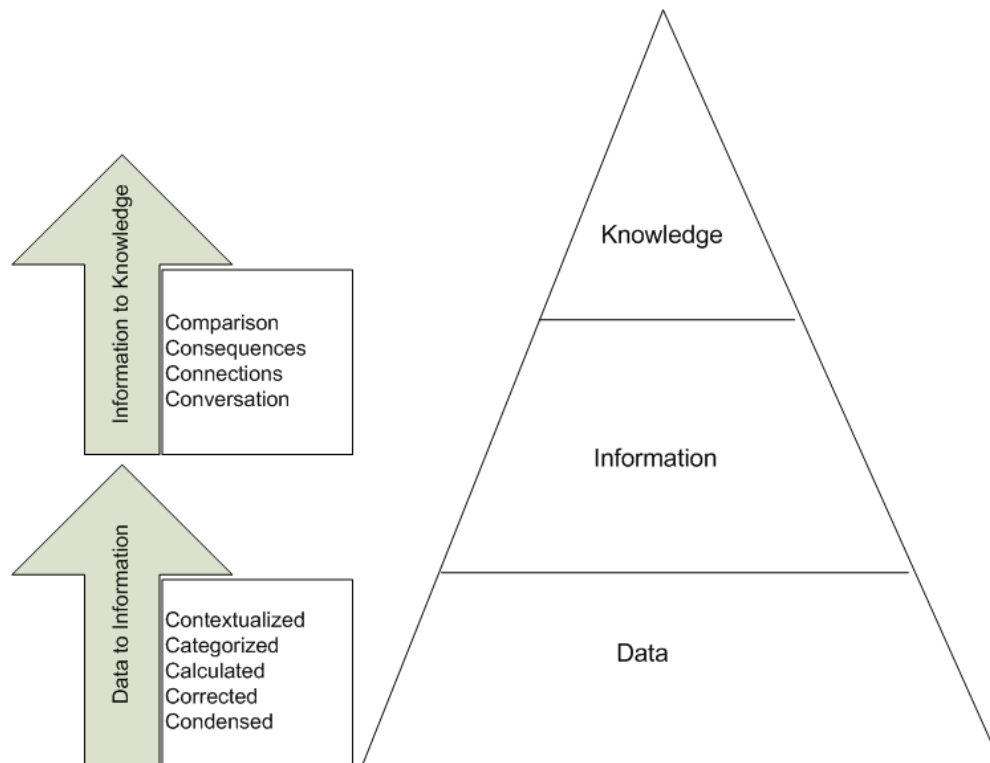


Figure 9: Data Information and Knowledge (based on Davenport and Prusak²²⁰)

Hicks et al.²²¹ is of the opinion that the knowledge hierarchy as proposed by Davenport and Prusak²²² is not adequate since it excludes personal knowledge and the latter is regarded as the foundation and the source of all data, information and knowledge.

The views of Davenport and Prusak on data, information and knowledge relate to the views expressed by Boisot²²³, according to Boisot, knowledge builds on information that is extracted from data. “Data is discrimination between physical states black, white, heavy, light, etc. that may or may not convey information to an agent. Whether it does so or not depends on an agent’s prior stock of knowledge”.²²⁴ Boisot uses the

²²⁰ Davenport & Prusak (1998).

²²¹ Hicks et al. (2006).

²²² Davenport & Prusak (1998).

²²³ Boisot (1998).

²²⁴ Stewart (2003: 6).

example of the red, amber and green lights of a traffic light. For a bushman in the undeveloped Kalahari region it would not mean much. Markings in the grass or soil indicting that animals must be nearby would mean much more to such a person.²²⁵

There is thus a distinction between data as properties of things and knowledge as property of agents to enable them to act in particular circumstances. As stated by Boisot: “Information is that subset of the data residing in things that activates an agent it is filtered from the data by the agent’s perceptual or conceptual apparatus.”²²⁶

The latter statement in turn relates to the view of Stewart who regards data and information as elements that plug into knowledge but what information and knowledge are, depends on *context*: “One man’s data can be another man’s knowledge.”²²⁷

Boisot’s view on data, information is illustrated in Figure 10:

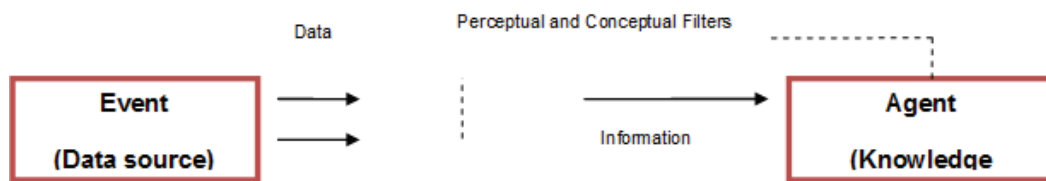


Figure 10: Data Information and Knowledge

Boisot includes the expectations of the observer when dealing with information and knowledge: “Information is data that modifies the expectations or the conditional readiness of an observer. The more those expectations are modified, the more informative the data is said to be. Knowledge is the set of expectations that an

²²⁵ This view is important in terms of interpretation and the retrospective nature of sense making, discussed in chapters 4 and 5.

²²⁶ Boisot (1998: 12).

²²⁷ Stewart (2003: 6).

observer holds with respect to an event. It is a disposition to act in a particular way that has to be inferred from behaviour rather than observed directly.”²²⁸

Although Davenport and Prusak as well as Boisot includes the observer, McDermott²²⁹ takes this link to the human act further by identifying six elements differentiating information from knowledge, namely:

- Knowing is a human act
- Knowledge is the residue of thinking
- Knowledge is created in the present moment
- Knowledge belongs to communities
- Knowledge circulates through communities in many ways
- New knowledge is created at the boundaries of old

Not all authors regard knowledge as something “higher” than information - Tuomi²³⁰ proposes a reversed hierarchy where data comes last – knowledge is regarded as a prerequisite and used to create information and data: “There are no isolated pieces of simple facts” unless someone has created them using his or her knowledge. Data can emerge only if a meaning structure, or semantics, is first fixed and then used to represent information”.²³¹

Johannessen et al²³² uses systems thinking and regard data, information and knowledge as a social system, not a linear or a hierarchical movement from data to information

²²⁸ Boisot (1998: 20).

²²⁹ McDermott (1999).

²³⁰ Tuomi (1999).

²³¹ Tuomi (1999: 107).

²³² Johannessen, Olaisen et al. (2002).

and knowledge but an interrelated system. They present the following conceptual model for the elements and patterns which constitute knowledge:

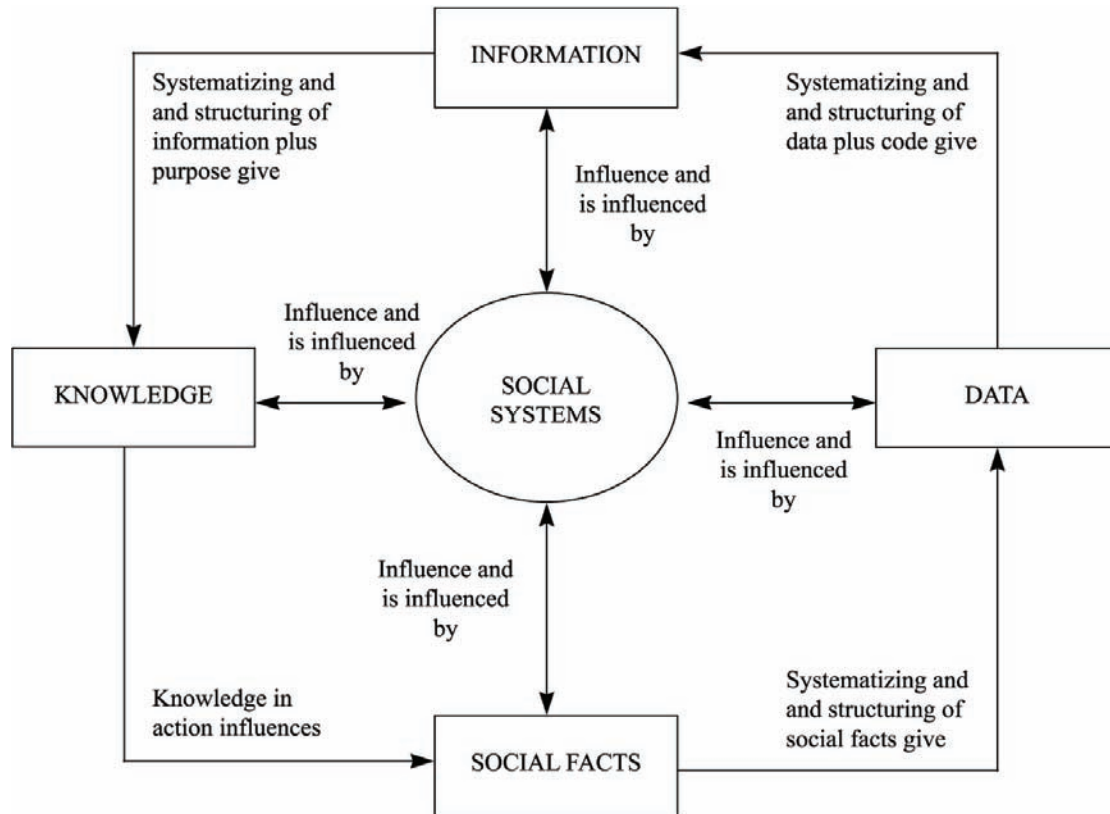


Figure 11: Data information and knowledge as social system²³³

The concepts of data, information and knowledge are central to the debate on the concept of knowledge (as discussed in Chapter 2). The general theme seems to be that data encompasses items or symbols without context. Providing context transforms data to information. Knowledge is something more than just information – meaning must be assigned by a person. Information must be processed by our minds to eventually become knowledge. Nonaka and Takeuchi²³⁴ view information as messages and a flow of messages whilst knowledge is the commitment and beliefs

²³³ Johannessen, Olaisen et al. (2002).

²³⁴ Nonaka & Takeuchi (1995).

created by these messages. As information becomes knowledge when processed by our minds, knowledge can also become information again when captured in text or databases. The latter plays an important part in terms of the notion of codifying knowledge.

The issues around data, information and knowledge are central to the theme of this thesis. Approaching these concepts as building on each other, adding value to data to transform it into information and adding value to information to transform it into knowledge represents an itemised view of knowledge and is intrinsically linked to notions of “capturing” and “storing” knowledge. It also relates to the process of making tacit knowledge explicit – information transformed to knowledge by a person can be made explicit again through social interaction or by embedding this tacit knowledge in organisational artefacts.

Yates-Mercer & Bawden²³⁵ distinguish between two approaches or models to data, information and knowledge:

2.4.6. The Scalar or Pyramid model

In this model, the concepts of information and knowledge are regarded as closely related which can be transformed outside the human mind. There is a generally accepted view of *progression* from data to information and information to knowledge, a simple linear or scalar progression. In this progression there is a distillation process with value add activities making the progression possible. The authors have a problem with the exact nature of how the transformation takes place in the process of moving from data to information and to knowledge. They conclude that the scalar model is specifically aimed at dealing with explicit knowledge.

2.4.7. The Cognitive Model

In this model knowledge is linked to the individual: Knowledge, being subjective, cannot be directly transferred or communicated from one person to another, but must

²³⁵ Yates-Mercer & Bawden (2002).

be converted into information first. Information is then regarded as the objective – and therefore communicable and recordable – form of knowledge”.²³⁶

2.4.8. Comparison of the models

The way in which these models are espoused by organisations will determine the way knowledge is defined and how it is managed. In utilising the scalar model, organisations will regard knowledge as a special kind of information and there will be an emphasis on systems to capture and manage knowledge. Organisations adopting the cognitive model will realise that knowledge exists only in “minds” and a cultural approach will be used to channel collective knowledge. The latter will lead to a clear distinction between information management practices and systems and knowledge management practices and systems within the organisation.

2.4.9. The link to sense making

The different approaches to data, information and knowledge played an important part in the selection of authors to compare in this thesis. The common sense approach of Davenport and Prusak (1998) provides practical mechanisms to deal with knowledge whilst Weick (1995) provides a distinction between interpretation and knowledge. Interpretation can be linked to existing (and explicit) knowledge whilst sense making processes can be linked to generating new knowledge. A cognitive approach to knowledge can also be used to explore the link between knowledge and action. According to Davenport and Prusak,²³⁷ organisations interact with the environment and absorb information, turning it into knowledge and taking action based on their experiences and values. This view can be linked to Weick’s²³⁸ views on the social nature of sense making, the retrospective nature of sense making, enactment of environments and extraction of cues from the environment.

²³⁶ Yates-Mercer & Bawden (2002: 21).

²³⁷ Davenport & Prusak (1998).

²³⁸ Weick (1995).

Tsoukas and Vladimirou²³⁹, state that the views of Davenport and Prusak underscore the dynamic character of knowledge (where knowledge is both an outcome and a process for incorporating new experiences) but that it is not clear how knowledge is treated differently from information. The way how organisations make sense of their worlds can be used by focusing on how individual knowledge actually becomes embedded in an organisational context.

2.5. Knowledge Generation

Knowledge generation represents for Davenport and Prusak both knowledge acquired by an organisation and knowledge generated from within the organisation: “When we talk about knowledge generation, we mean the knowledge acquired by an organization as well as that developed within it. Acquired knowledge does not have to be newly created, only new to the organization.”²⁴⁰

2.5.1. Acquiring Knowledge outside the Organisation

Acquiring knowledge can also be linked to knowledge markets (as discussed in paragraph 2.3) as organisations can utilise external consultants to acquire knowledge for the organisation.

Organisations can also purchase other organisations and thus buy people and knowledge: “A company that acquires another firm for its knowledge is buying people (that is, knowledge that exists in people’s heads and within communities of knowers) perhaps some structured knowledge in document or computerized form, and the routines and processes that embody the purchased company’s knowledge. Since reliable analytical tools for measuring the value of this knowledge do not yet exist, determining how much that knowledge is worth is speculative and sometimes unnervingly subjective.”²⁴¹

²³⁹ Tsoukas & Vladimirou (2001).

²⁴⁰ Davenport & Prusak (1998: 53).

²⁴¹ Davenport & Prusak (1998: 54).

Organisations can also “rent” knowledge by outsourcing research. An example of knowledge renting is organisations financial support of university research in exchange for first commercial use of the research results.

2.5.2. Generating Knowledge within the Organisation

The first method of knowledge generation within an organisation is the establishment of dedicated resources and groups whose aim it is to come up with new knowledge. The introduction of formal research and development units is an example of dedicated resources for knowledge generation.

Knowledge fusion is the second method of knowledge generation. For fusion to happen, people with different views and perspectives should be bough together to come up with collaborative answers to specific issues. Intentionally combining people with different skills, ideas and values can generate innovation and knowledge. The principles of complexity can also be used by introducing conflict or chaos to create a new synergy.

According to Davenport and Prusak there are five principles to assist knowledge generation through fusion, namely:

- Enhancing the awareness of the value of knowledge and demonstrate a willingness to invest in processes for generating this knowledge.
- Identification of the right knowledge workers that can be brought together to generate knowledge.
- Focusing on the creative potential that exists when bringing together different views – seeing differences as positive assistance to avoid simple answers to complex issues.
- Explain the need for knowledge generation as part of a common goal (to enhance knowledge sharing).
- Introduce a metrics to measure milestones and success concentrating on the true value of knowledge (rather than simple balance sheet accounting).

“Adapt or die” is the third method of knowledge generation. Organisations must adapt to changing circumstances, new product lines by competitors, market movements, economic changes, political changes. In this regard self organisation as part of complex adaptive systems is regarded as important. Success is sometimes an enemy of change and organisations are reluctant to change their script or recipe in a situation where it is business as usual. To combat reluctance to change, an organisation could instil a sense of crisis before it exists, in order to enhance the agility of the organisation to actually deal with a real crisis.²⁴²

The last internal knowledge generating element is informal self organising networks within the organisation. Some of these informal networks might also become formal networks within the organisation. There are communities of knowers brought together by common interests where expertise is shared, collaboration and communication take place and new knowledge is generated.

2.6. Codifying and Managing Knowledge

Subsequent to the generation of knowledge (as discussed in paragraph 2.5) Davenport and Prusak²⁴³, proposes measures to codify knowledge (including tacit knowledge), to coordinate knowledge and lastly to transfer knowledge. It is a process similar to Davenport and Völpel²⁴⁴, who proposed the following process for managing knowledge:

²⁴² This view can be linked to the concept of autonomic arousal discussed in Chapter 4.

²⁴³ Davenport & Prusak (1998).

²⁴⁴ Davenport & Völpel (2001).

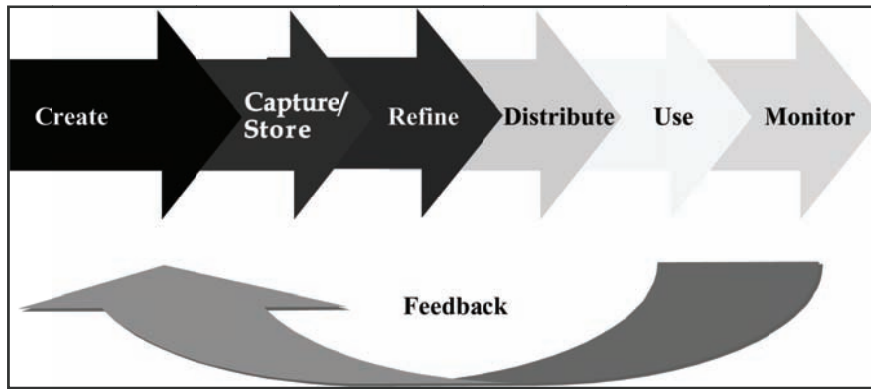


Figure 12: Knowledge Management Process: Davenport²⁴⁵

The model in Figure 12 is closely related to the process proposed by Gartner²⁴⁶ illustrated in Figure 13:

KM Is About "Managing and Using Your Intellectual Capital"

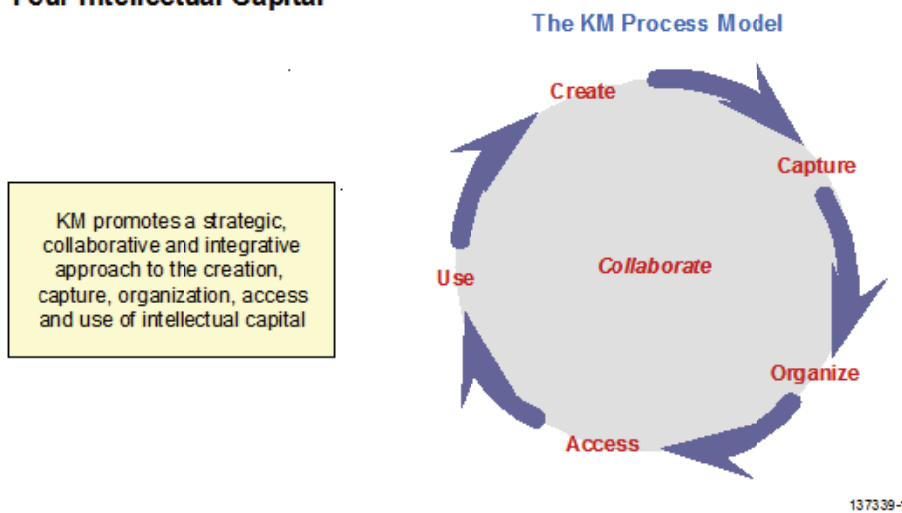


Figure 13: Gartner view of Knowledge Management²⁴⁷

²⁴⁵ Davenport & Völpe (2001: 217).

²⁴⁶ Logan (2006).

²⁴⁷ Logan (2006).

These processes supports the views of knowledge as tangible item that can be captured, stored, preserved, managed and retrieved. This view of managing knowledge is opposed by Snowden²⁴⁸, who states that:

- “Knowledge can only be volunteered; it cannot be conscripted”.²⁴⁹
- “We can always know more than we can tell, and we will always tell more than we can write down”.²⁵⁰
- “We only know what we know when we need to know it”.²⁵¹

2.6.1. Knowledge Codification

According to Davenport and Prusak²⁵², the objective of codification is to ensure that organisational knowledge is transformed in order to make it accessible to those who need it. Through codification, knowledge becomes organised, explicit, portable and easy to understand. It can also be classified, modelled, simulated and mapped. “Codification in organizations similarly converts knowledge into accessible and applicable formats. Knowledge managers and users can categorize knowledge, describe it, map and model it, simulate it, and embed it in rules and recipes.”²⁵³ Although codification of knowledge does not imply the use of technology to codify in all cases, technology plays an important part in the codification process.

Although codifying knowledge is problematic it is regarded as essential in leveraging the value of knowledge within an organisation. Codification provides, according to

²⁴⁸ Snowden (2002).

²⁴⁹ Snowden (2002: 102).

²⁵⁰ Snowden (2002: 102).

²⁵¹ Snowden (2002: 102).

²⁵² Davenport & Prusak (1998).

²⁵³ Davenport & Prusak (1998: 68).

Davenport and Prusak “permanence to knowledge that may otherwise only exist inside an individual’s mind”.²⁵⁴

The organisational definition of knowledge (and thus value of knowledge) is an intrinsic part of codification – the organisation must determine what kinds of knowledge would be useful and should be accessible prior to codification. The latter leads to the identification of valuable knowledge and finding sources of relevant knowledge within the organisation (through a process of knowledge mapping).

Apart from codifying knowledge and adding this knowledge to databases, an organisation can also use guides to indicate where knowledge exists. These yellow pages or knowledge maps do not contain knowledge as such but serve to indicate sources of knowledge within the organisation.

On codifying tacit knowledge, Davenport and Prusak²⁵⁵ make the following statements:

- Knowledge resides in human minds and is difficult (if not impossible) to codify: “Knowledge in organizations ranges from complex, accumulated expertise that resides in individuals and is partly or largely inexpressible to much more structured and explicit content.”²⁵⁶
- Tacit knowledge cannot be managed with technology and it cannot be reproduced using technology: “Tacit, complex knowledge, developed and internalized by the knower over a long period of time, is almost impossible to reproduce in a document or database.”²⁵⁷

²⁵⁴ Davenport & Prusak (1998: 87).

²⁵⁵ Davenport & Prusak (1998).

²⁵⁶ Davenport & Prusak (1998: 70).

²⁵⁷ Davenport & Prusak (1998: 70).

As Snowden²⁵⁸ the authors recognise that people know more than they can tell and know quite substantially more than can be written and captured: “We simply can’t represent some knowledge effectively outside the human mind.... Even if this kind of knowledge could be successfully codified, the process of getting it on paper would be prohibitively laborious. Trying to get down everything a skilled knowledge worker knows would be similarly arduous and futile.”²⁵⁹

Given the difficulties in codifying tacit knowledge, the importance of knowledge maps is re-emphasised – the codification of the richest tacit knowledge is in the form of maps indicating to others where this knowledge exists - “pointing the seeker to it, and encouraging them to interact.”²⁶⁰ Although the codification of tacit knowledge is difficult, the substantial value of this asset necessitates an effort.

The use of narrative is according to Davenport and Prusak²⁶¹ an important tool to share tacit knowledge. The authors echo the views of Weick²⁶² that people think in narrative, that narrative embodies past experiences that can be constructed retrospectively but also prospectively and that narrative is a sense making tool. According to Davenport and Prusak the narrative is the best way to learn in complexity and therefore stories can be encoded and captured as part of a knowledge management initiative.

2.6.2. Transfer of knowledge

Once knowledge is captured, the organisation should have strategies in place to deal with the successful transfer of knowledge. Codification ensures that knowledge is transferable and portable. Knowledge transfer involves the transmission of knowledge to a recipient but also the absorption of the knowledge by the participant. Making

²⁵⁸ Snowden (2002).

²⁵⁹ Davenport & Prusak (1998: 71).

²⁶⁰ Davenport & Prusak (1998: 71).

²⁶¹ Davenport & Prusak (1998).

²⁶² Weick (1995).

knowledge available for transfer does not mean it is transferred – it needs to be absorbed by the recipient. In order to transfer and absorb people need to be in contact, talk and exchange ideas. In some cases it is necessary to enable people to share by creating physical and virtual spaces for sharing. This view is criticised by Swan et al. "A core assumption in the literature on KM is that technology can provide the network of links between geographically dispersed groups and individuals that enables effective knowledge sharing. However, this privileges an information processing view where knowledge is seen as cognitive abilities (inputs) which can be transferred and processed using technological networks to produce certain outputs. This equates knowledge to the skills and cognitive abilities of individuals and views the transfer of this knowledge through networks as unproblematic...Knowledge is assumed to “flow” fluidly between people through networks".²⁶³

2.6.3. Using Technology

Davenport and Prusak use the term “techknowledgey”²⁶⁴ to illustrate that technology forms an important part of knowledge codification and transfer as well as broader knowledge management initiatives within organisations. Although knowledge is described as much more than technology, technology is regarded as a catalyst of the knowledge management movement. Technology can be used to capture, manage, store and retrieve explicit knowledge and can also assist in enhancing cooperation, collaboration and sharing (like Groupware applications) thus assisting the organisation in knowledge transfer. McDermott is critical of using these types of technologies and states: “The great trap in knowledge management is using information management tools and concepts to design knowledge management systems”.²⁶⁵

²⁶³ Swan et al. (1999: 272).

²⁶⁴ Davenport & Prusak (1998: 123).

²⁶⁵ McDermott (1999: 104).

2.7. Conclusion: Chapter 3

In their book *Working Knowledge: How Organizations manage what they know*, Davenport and Prusak provided:

- An understanding of what knowledge is in an organisation context.
- Outlined differences between data, information and knowledge
- A model of dealing with knowledge generation, codification and transfer

There is no doubt that it represents a practical approach to knowledge management that is widely used in the literature (as discussed in paragraph 2.1). Although the approach can be seen as a “commodity” view of knowledge, the authors acknowledges the element of unmanageability of knowledge and aim to address knowledge as both a “thing” and a “flow’.

Chapter 4:

Knowledge as Flow

3.1. Introduction

3.1.1. On Weick

Gioia²⁶⁶ wrote an appreciation of Weick in a special edition of the journal *Organization Science* (a special edition of the journal dedicated to the work of Weick). In the introduction, Gioia states: “When I first read Weick in 1977, I had no idea what to make of him. The style of writing and thinking was unusual. Even weird to me.”²⁶⁷ And he continues “Oh my god; I wasn’t even sure this was English. The language, as well as his ideas at first seemed to me confusing, contrived, and even convoluted. Yet they also seemed rich with possibility and obviously were rendered by someone who wrote as if he knew what he was talking about”.²⁶⁸

Weick refers to himself as a practitioner “who works with abstract words for a living, reads a lot, and would like to get better at crafting images that capture what I think organizing is all about”.²⁶⁹ Using abstract words, and concepts to build rich images of how organisations make sense, use language, interact, interpret, comprehend, reduce ambiguity, enact their environment, maintain themselves and survive in a continuous flow of events is probably a good summary of what Weick represents. In this context organisations can be seen as “constituted by systems of meanings and social processes of making sense, during which meanings are assigned to things and events”.²⁷⁰

²⁶⁶ Gioia (2006).

²⁶⁷ Gioia (2006: 1709).

²⁶⁸ Gioia (2006: 1709).

²⁶⁹ Weick (1999: 797).

²⁷⁰ Ericson (2001: 113).

Weick's focus on *people* is clear from his view of organisations as contained in the *closing* paragraph of his book *The social psychology of organizing*: "Organizations keep people busy, occasionally entertain them, give them a variety of experiences, keep them off the streets, provide pre-texts for storytelling and allow socializing. They haven't anything else to give."^{271 272}

The preceding paragraphs are indicative of the complex nature of Weick's work, language and concepts.

3.1.2. Moving form Thing to Flow

The link between knowledge management and sense making is perhaps best explained by stating *what sense making is not* – Boland and Yoo²⁷³ describes the traditional decision making view where a manager operates in a knowable and stable environment with qualified objectives and a choice of alternative routes. Taking action and choosing a route provides feedback that in turn informs the situation and the future action - a "purposeful actor with a set of goals" that operates "in a cybernetic feedback and control model".²⁷⁴ In Weick's complexly crafted images of organising, this stable and linear description is not sense making. In a sense making world actors operate in a continuous flux of events and activities in an uncertain puzzling world that is full of surprises, slippery, ambiguous, and equivocal - where the actor *first acts* and *then thinks*. Decisions are not about "things out there" but about people; people's interaction, people's action and how people construct reality socially by using language.²⁷⁵

²⁷¹ Weick (1979: 264).

²⁷² Eisenberg (2006) states that Weick always espoused elements of systems thinking and culture and this view of an organisation is an indication of Weick's move from systems to culture paving the way for the theory of sense making as developed in Weick's subsequent works. Eisenberg points out that the first edition of Weick's *Social Psychology of Organizing* published in 1969 had more of a systems approach in terms of organisations.

²⁷³ Boland & Yoo (2002).

²⁷⁴ Boland & Yoo (2002: 382).

²⁷⁵ Weick (1995); (2001); (2002).

Weick regards knowledge not as something that people possess in their heads, but as something people do together – *doing represents knowing*.²⁷⁶ This view is echoed by Cook and Brown “knowing does not focus on what we possess in our heads it focuses on our interactions with the things of the social and physical world²⁷⁷”.

In organisational life there is a lot less rationality than meets the eye – moments of rationality where problems are perceived then logically dissected and understood, courses of actions investigated and one sound course of action chosen are extremely rare. According to Weick²⁷⁸, in most cases:

- The nature of the problems themselves is unclear and defining the problem(s) is complex.
- The problematic nature of defining a problem brings about issues related to the amount of information available to deal with a situation and the reliability of this information. Existing information may be incomplete or unreliable.
- The information that does exist can have conflicting interpretations.

Weick²⁷⁹ is critical of the use of nouns – they are static, in contrast with verbs which are closely related to action. Nouns mean structure and a certain rigidity whilst verbs provide a sense of flow. This view is aptly described by Wicker: “For Weick the noun *organization* is a myth by which organizations are seen as substantial, rigid, solid, and static. Reality is better captured by the verb *organizing* with its imagery of movement patterning, timing, sequences, interactions, and loose linkages. Organizing is a continual process by which information is made less ambiguous as a result of the coordinate actions of individuals.”²⁸⁰

²⁷⁶ Weick (1995); (2002).

²⁷⁷ Cook and Brown (1999: 388).

²⁷⁸ Weick (1995), Weick (2001).

²⁷⁹ Weick (1979); (1995)

²⁸⁰ Wicker (1980: 714).

3.2. The Nature of Sense Making

The WordNet lexical database managed by the Cognitive Science Laboratory at Princeton University²⁸¹ defines the noun *sense* as a “general conscious awareness”, “the way in which a word or expression or situation can be interpreted”, “the faculty through which the external world is apprehended”, “sound practical judgment” and “a natural appreciation or ability”. Sense as verb is defined as to “perceive by means of a physical sensation”, “detect some circumstance or entity automatically”, “become aware of not through the senses but instinctively” and “comprehend”.

3.2.1. Making Sense

According to Weick, the concept of sense making well named since it literally means just that – the making of sense. Sense making is not a metaphor and should be taken *literally*. Literally, then, making sense would involve elements of comprehension, interpretation, judgement, awareness, direction²⁸² and “turning circumstances into a situation that is comprehended explicitly in words and that serves as a springboard into action”.²⁸³ People make sense continuously – most of the time we do not even realise that we are making sense – it is as fundamental as breathing (we attribute meaning to things every moment of our lives) and as final as death (to stop making sense is to die by suicide).

Sense making begins with an individual, a sense maker. This sense maker is in a continuous flow of activities, events, places, projects and people. The sense maker “chops” moments out of this flow, extracts cues out of the environment and places these cues into framework to assign meaning to it. By putting stimuli in frameworks, the sense maker is “turning circumstances into a situation that is comprehended

²⁸¹ Princeton University (1997).

²⁸² The French word “sens” is similar to the English word sense but also includes the specific notion of direction such as in the phrase “bon sens” - “the right direction”.

²⁸³ Weick et al. (2005: 409).

explicitly”.²⁸⁴ By noticing cues from the environment and inking these cues to existing frames of reference the sense maker can structure the unknown, create meaning, comprehend, understand and explain.

We make sense by labelling and categorising things; we observe the environment, interact and select cues that we can use to label things: “Sense making occurs when individuals turn a flow of organizational experiences into words and salient categories that they can comprehend and then use these as a springboard for action”.²⁸⁵ By noticing cues in our present circumstances, we create “something” (a concept, an image or thought) that we can link to categories or frameworks that exist in our mind and use this to deal with surprises or interruptions. It is, however, not that straightforward and there are potential barriers present in linking cues to frames. These barriers are at the centre of sense making: “The trouble starts when I fail to notice that I see only whatever confirms my categories and expectations but nothing else. The trouble deepens even further if I kid myself that seeing is believing. That’s wrong. It’s the other way around. You see what you expect to see. You see what you have the labels to see. You see what you have the skills to manage. Everything else is a blur and in that ‘everything else’ lies the developing unexpected event that can bite you and undermine your best intentions”²⁸⁶ With reference to this statement; we should not only be sensible by looking for cues and linking them with existing categories, labels or frames but we should also be mindful in order to re-work existing categories and labels and update them in order to notice more cues. It is this mindfulness that links individual sense making (“I”) to collective sense making (“we”): “If knowledge is brought to bear in mindful action, then ‘the locus of the agent’s knowing is not in his head but in practice, that is to say, his understanding is implicit in the activity in which he engages’”²⁸⁷

²⁸⁴ Weick et al. (2005: 284).

²⁸⁵ Bhatt et al. (2006: 898).

²⁸⁶ Weick & Sutcliffe (2001: 46).

²⁸⁷ Tsoukas (1996: 16) cited in Schultze & Stabell (2004: 558).

Klein et al.²⁸⁸ regard sense making as creativity, curiosity, comprehension, the creation of mental models and situational awareness. Although sense making can include the afore-mentioned elements, sense making is in effect “a motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively”.²⁸⁹

Snowden views sense making as: “the way that human choose between multiple possible explanations of sensory and other input as they seek to conform the phenomenological with the real in order to act in such a way as to determine or respond to the world around them”.²⁹⁰

Louis describes sense making as: “a recurring cycle comprised of a sequence of events occurring over time. The cycle begins as individuals from unconscious and conscious anticipations and assumptions which serve as predictions about future events”.²⁹¹

According to Klein et al.²⁹² sense making serves several functions, notably:

- It satisfies a need or drive to comprehend.
- It helps us test and improve the plausibility of our explanations and explain apparent anomalies. Whether an explanation makes sense depends on the person who’s doing the sense making.
- The property of “being an explanation” isn’t a property of statements but an interaction of people, situations, and knowledge.

²⁸⁸ Klein et al. (2006).

²⁸⁹ Klein et al. (2006: 71).

²⁹⁰ Snowden (2005: 2).

²⁹¹ Louis (1980: 241).

²⁹² Klein et al. (2006: 72).

- It's often a retrospective analysis of events. It clarifies the past but doesn't make it transparent (that is, completely understood).
- It anticipates the future. This makes action possible, though uncertain. It helps us muster resources, anticipate difficulties, notice problems, and realize concerns.
- It isn't the choice of an explanation but a process of deliberating over alternative plausible explanations.
- It guides the exploration of information.
- It's often a social activity that promotes the achievement of common ground. It isn't just an individual activity.

3.2.2. Playing Charades

The game Charades²⁹³ and games like Pictionary provide metaphors for sense making processes. In both games an actor enacts "things" by using gestures and/or drawings. The observers watch, are puzzled and they strive in turn to determine what the actor is enacting. If the actor is acting out an animal or the name of a film, he/she conveys messages to the audience through gestures and the audience in turn attempt to make sense of the messages and give feedback. There are several parallels to sense making in this scenario:

- The actor doing the gesturing only knows what he is perceived as, as he hears the guesses from the audience. The actor produces an enacted environment but does not know what he/she is doing until he/she sees and hears the reaction from the audience.
- The actor enacts an environment that is open to the audience for numerous interpretations, punctuations, views and connections.

²⁹³ Weick (2001); (1979).

- Through gesturing and enactment, the actor imposes meanings on the environment, which in turn come back and influences his actions
- The audience sees the meanings as puzzles rather than certainty; they look for plausible solutions rather than the detail of the act.
- The actor uses the stimuli emanating from the environment to redirect the audience and provide new meanings.

Organisational life is a game of charades; “organisations talk to themselves in order to clarify their surroundings and learn more about them”²⁹⁴, they look back retrospectively on what they have done, to understand their actions and to inform future action; they probe the environment, get feedback and adapt actions accordingly. Organisations enact the environment to determine who they are and what they do; they “see” their doing only after the act – “an organization can never know what it thinks or wants until it sees what it does”²⁹⁵.

Charades also relates to the “ongoingness” of sense making as "symbolic processes through which reality is created and sustained"²⁹⁶

3.2.3. Sense Making, Uncertainty, Ambiguity and Equivocality

Explicit sense making occurs when a sense maker notices something in the continuous flow of events that is surprising, that is unexpected, that is out of the ordinary with either no, too little or too much information; with no previous frames of references or too many conflicting frames of references. In this scenario there are uncertainties, equivocality and ambiguity with either no or too many interpretations being possible. With this surprising interruption, the sense maker asks the question “what is going on here”, “what is the story” and more importantly – “what should I do now” and the latter leads to the making of sense.

²⁹⁴ Weick (2001: 191).

²⁹⁵ Weick (2001: 189).

²⁹⁶ Weick (2001: 4).

Uncertainty is linked to information processing and can be regarded as meaning the *absence of information*.²⁹⁷ Galbraith defines uncertainty as "The difference between the amount of information required to perform the task and the amount of information already possessed by the organization."²⁹⁸ Equivocality relates to ambiguity and the presence of multiple conflicting interpretations where questions need to be asked to define the problem in the first place. As stated by Daft, Lengel et al. "A major difference between uncertainty and equivocality is in the information processing response of managers. Uncertainty leads to the acquisition of data. Equivocality leads to the exchange of subjective views among managers to define the problem and resolve disagreements".²⁹⁹ Equivocality relates to cues with more than one meaning and cues that cannot be definitively classified. Implicit in Weick's views on equivocality is that equivocality is not synonymous with ambiguity but rather relates to the degree of ambiguity, the number of existing frames of references, the degree of plausibility in the existing references and the degree of difference between these conflicting frames of reference.³⁰⁰ Sense making is a process to reduce equivocality through interaction, mutual patterning and language.

Touve introduces the concept of asymmetry in addition to uncertainty and equivocality "In addition to uncertainty and equivocality, a third force, asymmetry, interacts to influence information processing. The presence of this asymmetry prevents us from speaking of organizations as having a singular goal for reducing uncertainty or equivocality. Instead, organizations are best considered as a complex interaction of competing objectives and conceptions of how uncertainty or equivocality might be reduced, if reduced at all".³⁰¹

²⁹⁷ Daft, Lengel et al. (1987).

²⁹⁸ Galbraith (1973: 12) cited in Daft, Lengel et al. (1987: 357).

²⁹⁹ Daft, Lengel et al. (1987: 357).

³⁰⁰ Weick (1979), (1995), (2001).

³⁰¹ Touve (2007: 7).

3.2.4. Sense Making, Interpretation and Decision Making

Sense making is more than interpretation. Interpretation can be seen as dealing with existing data, information or knowledge – sense making is about “the ways people generate what they interpret”.³⁰² Interpretation is like reading a script whilst sense making is dealing with how the script was written in the first place. Sense making is about invention and an invention which precedes interpretation. Once an action is completed, we look back to construct a plausible account of how we got to the action. Whilst interpretation can be seen more as a product, sense making is always a process. We continuously strive to make sense of something (the activity is more important than the product). As stated by Weick: “It is common to hear that someone made ‘an interpretation’. But we seldom hear that someone made ‘a sensemaking’. We hear instead that people make sense of something Sensemaking is about invention rather than discovery of meaning”³⁰³

Interpretation relates to the translation of existing facts and the rendering of existing text - sense making investigates the underlying problem and where the cues in the environment came from.

Decision making is about choices and outcomes whilst sense making is about the process prior to choice. Sense making shifts from the individual decision maker to the context in which the decision was made – it is not about choice or outcome but about framing the problem which necessitates a decision in the first place. “Sensemaking is about the interplay of action and interpretation rather than the influence of evaluation on choice”.³⁰⁴

One can use the metaphor of music; in classical music we interpret and make decisions but we do this in context of the script we are dealing with – it is more structured linear and rigid. In jazz we improvise, take cues and act on that – it is not

³⁰² Weick (1995: 13).

³⁰³ Weick (1995: 13-14).

³⁰⁴ Weick et al. (2005: 409).

chaos, there are rules but it is more of a ‘loose framework’ than a script with flexibility, and adaptability. In jazz it is about reading the script and creating the script to be read.³⁰⁵

3.3. The Properties of Sense Making

From the overview of the nature of sense making, I have surmised that sense making is a process or activity, where people use extracted cues from the environment, connected to existing frameworks to deal with uncertain situations or surprises. They look back over events and communicate in a social context to understand what is happening.

The properties of sense making can be identified in the following description of sense making acts: “Once people begin to act (*enactment*), they generate tangible outcomes (*cues*), in some context (*social*), and this helps them to discover (*retrospect*) what is occurring (*ongoing*), what needs to be explained (*plausibility*) and what should be done next (*identity enhancement*)”.³⁰⁶

Weick³⁰⁷ identifies seven properties of sense making, namely:

- Grounded in identity construction
- Retrospective
- Enactive of sensible environments
- Social
- Ongoing
- Focused on and by extracted cues

³⁰⁵ Zack (2000); Hatch & Weick (1998); Meyer, Frost et al. (1998).

³⁰⁶ Weick (1995: 55). Emphasis not in original text.

³⁰⁷ Weick (1995).

- Driven by plausibility rather than accuracy

As sense making *recipe*, Weick³⁰⁸ uses a passage from Wallas: "The little girl had the making of a poet in her who, being told to be sure of her meaning before she spoke, said: '*How can I know what I think till I see*' ".³⁰⁹ This recipe aptly summarises the seven properties of sense making:

- Identity: The process begins with a sense maker (all the pronouns refer to identity). The "Who am I" is indicated by the discovery of *how* and *what* I am thinking.
- Retrospect: To learn what I think I need to look back over what I said, what I believed, what I understood previously. I use previously constructed frames of references and previous experiences in the process of making sense.
- Enactment: I create the object to be seen and inspected when I say or do something. I create environments by acting in those environments.
- Social: What I say, the communication of my ideas and my conclusions are always determined by who socialised me, how I was socialised, my interactions and the audiences I deal with.
- Ongoing: I might have already changed my ideas when looking back over what I said. My communication is spread over time and completes with other activities – once I reflect on what I said I am in the process of changing again.
- Extracted Cues: Cues are the "evidence" extracted from the ongoing flow of activities used to solve the surprise. We extract cues by noticing certain things and we linked this to existing frames of references. Cues are linked to the context. The "what" that I am thinking in the recipe is a small part of the

³⁰⁸ Weick (1995).

³⁰⁹ Wallas (1926: 106) cited in Weick (1995).

“talking” that becomes prominent because of the context and personal dispositions.

- Plausibility: I need to know enough about what I think to get on with it but no more. What is sufficient for what I think and what is plausible? Accuracy is secondary.

In the sense making recipe, “The ‘saying’ involves action and animation, the ‘seeing’ involves directed observation, the ‘thinking’ involves the updating of previous thinking and the ‘we’ that makes all of this happen takes the form of candid dialogue that mixes together trust, trustworthiness and self-respect”.³¹⁰

The following image of sense making also contains all the properties of sense making: “Sensemaking involves the *ongoing retrospective* development of *plausible* images that rationalize what people are doing. Viewed as a significant process of organizing, sensemaking unfolds as a sequence in which people concerned with *identity* in the *social* context of other actors engage ongoing circumstances from which they *extract cues* and make *plausible sense retrospectively*, while *enacting more or less order into those ongoing circumstances*”.³¹¹

The properties of sense making are illustrated in Figure 14:

³¹⁰ Weick (2002: S9).

³¹¹ Weick, K. E. et al. (2005: 409): Italics not in original text

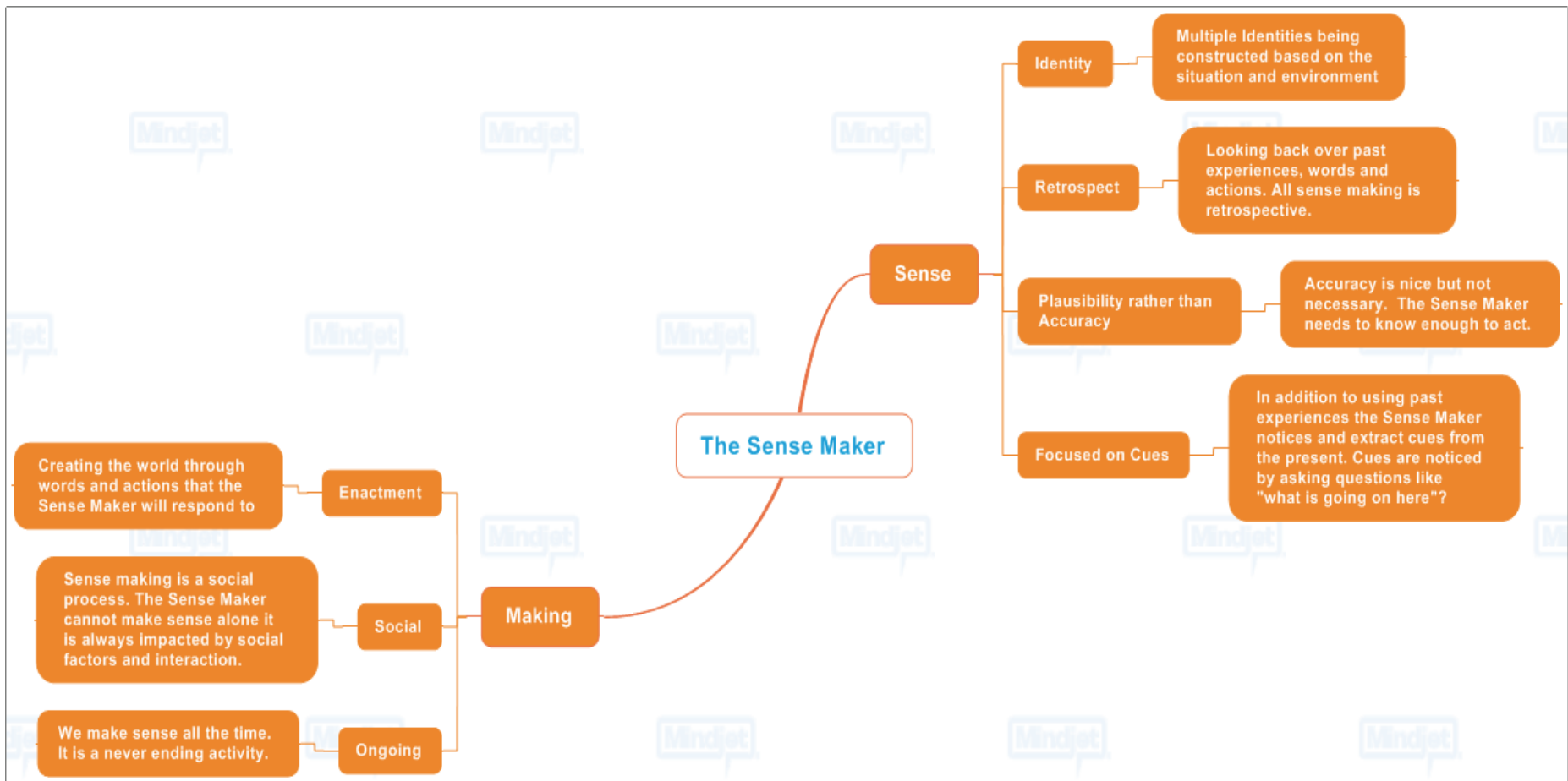


Figure 14: Properties of Sense Making

The following paragraphs will investigate the seven properties of sense making a more detail.

3.3.1. Grounded in Identity Construction

There is a natural tendency to see identity as fixed. Sense making, however, represents a process whereby we create identities and the definition of our identity (or definition of self) changes through human interaction: “identities are constituted out of the process of interaction”.³¹²

We are constantly changing our identity based on the situation and the people we interact with and continuously adapt identity to present the appropriate self. By attending a lecture, my identity is that of student, by visiting a medical practitioner my identity is that of patient, if I lead a group, my identity is that of leader. Depending on who I am, I am also defining “what is out there” and what to do. By constructing and changing my identity, I label (or structure context or “frame”) the persons that I deal with as well as the context of our interaction. Interaction with others provides cues for adapting identity. Weick³¹³ argues that:

- We make sense of what is happening by querying what implications these events have for who *we will be*.
- What a situation will mean is dictated by the identity we adopt in dealing with it. This in turn impacts on what we think is happening.
- What the situation means is defined by who we become whilst dealing with the situation.
- There is a need to have identity and identity is in turn a product of making sense.

³¹² Weick (1995: 20).

³¹³ Weick (1995).

- We have a specific focus on adapting our identity partly because we based identity on what we think others think of us. We perceive ourselves as how we think other individuals perceive us.
- Identity is linked to the need for self enhancement
- We probe the environment by projecting our identity on it and then observe what happens and what the consequences of the projection are.

Identity construction is central to sense making since who we are will impact on the cues we extract from the environment, the retrospective frames we will use, how we interact in a social context, how we will act and enact the environment and what we will see as plausible courses for action.

3.3.2. Retrospective

We make sense by looking back over past events and do retrospective analysis of what has happened. Understanding only occurs after the fact - “A perceived world is actually a past world”³¹⁴ - we only know what we have done after we did it.³¹⁵

“We are conscious always of what we have done, never of doing it.”³¹⁶ This means that actions are only known when they are completed -we can only make sense on the basis of the past there is nothing in the future the “something” used for reference is always the past.

Craig-Lees describes the retrospective nature of sense making as follows: “People can know what they are going to do but can only have understanding and meaning of the event or thought once it have been experienced... Thinking and knowing occurs in the

³¹⁴ Weick (2001: 462).

³¹⁵ Gioia et al. (2002), Weick (1995).

³¹⁶ Mead (1956: 136) cited in Weick (1979).

immediate past – once you have a thought it is in the past – a nanosecond constitutes the past”.³¹⁷

The central role of retrospect in sense making and the link between identity and retrospect are highlighted in the following passage from Weick: “Sensemaking involves the ongoing retrospective development of plausible images that rationalize what people are doing. Viewed as a significant process of organizing, sensemaking unfolds as a sequence in which people concerned with identity in the social context of other actors engage ongoing circumstances from which they extract cues and make plausible sense retrospectively, while enacting more or less order into those ongoing circumstances”.³¹⁸

Experience is seldom a continuous flow, it consists of distinct events that took place – we step out of our current stream of events and then look back at previous events, frame them by giving attention to what has already occurred. Forecasting, planning and strategic planning can only be successful if it is linked to this “reflective action and history”.³¹⁹ Looking back at past experiences can enable an organisation to answer questions such as “to what degree do we know what will happen? and to what extent do we know how to deal with it”.³²⁰

Given the constantly changing world, the relevance of retrospection needs to be addressed in terms of using reflection on past events as a tool to manage the future. Weick refers to this concept as “thinking the in future perfect tense”.³²¹ By using the future perfect tense “people envision a desired or expected future event and then act

³¹⁷ Craig-Lees (2001: 515).

³¹⁸ Weick et al. (2005: 409).

³¹⁹ Weick (1995: 30).

³²⁰ Tsoukas (2005: 266).

³²¹ Weick (1979: 196-197), Gioia et al. (2002: 623).

as if that event had already transpired, thus enabling a ‘retrospective’ interpretation of the imagined event”³²².

A future perfect confrontation of the future can also be illustrated with a metaphor of a jazz musician: A jazz musician cannot "look ahead at what he is going to play, but he can look behind at what he has just played; thus each new musical phrase can be shaped with relation to what has gone before. *He creates his form retrospectively*".³²³

3.3.3. Enactive of Sensible Environments

Whilst identity and retrospect is about “sens(ing)”, enactment is about the “making” of what is sensed.³²⁴

Weick³²⁵ can be seen a social constructivist; Magala defines social constructivism as follows: “Social constructivism is a theoretical term used to characterize a family of theories and theoretical schools in social sciences. What do they have in common? They are explaining a social production of reality (i.e. processes through which human agents make sense of their relationships and activities) and social organization of knowledge (which allows us to make sense) through interactions and communications”.³²⁶

Central to sense making is the notion that by acting (and talking) we create reality (and constraints) for ourselves: “To talk about sensemaking is to talk about reality as an ongoing accomplishment that takes form when people make retrospective sense of the situations in which they find themselves. There is a strong reflexive quality to the

³²² Gioia et al. (2002: 623).

³²³ Gioia (1988: 61) cited in Weick (1998: 547): Italics not in original text.

³²⁴ Weick (1995: 30).

³²⁵ Weick (1979).

³²⁶ Magala (2002: 17).

process. People make sense of things by seeing a world on which *they have already imposed what they believe*".³²⁷

Weick indicates that "reality is selectively perceived, rearranged cognitively, and negotiated interpersonally".³²⁸ There is no fixed environment or reality "out there"; reality is not detached from people – an individual or organisation, through its actions and communication contributes to the creation of an environment and changes in that environment which in turn they have to deal with. People "shape and are shaped by the context in which all sensemaking occurs".³²⁹ Enactment relates to action: "Enactment is first and foremost about action in the world and not about conceptual pictures of the world".³³⁰ The socially constructed reality does have "real" objects "but what is important is that we give them meaning and that in turn determine how we respond to them - "Enacted environments contain real objects such as reactors, pipes, and valves. The existence of these objects is not questioned, but their significance, meaning, and content is."³³¹

Weick³³² uses the example of policemen driving by a teenager who gives them a one finger salute. The policemen have several options; they can stop, ignore the teenager or return the gesture. Once they respond (any response) the policemen create the reality that they will have to deal with. Similarly, organisations create realities in an ongoing manner and these realities will impact or even constrain future action – "an organization can never know what it thinks or wants until it sees what it does".³³³ What organisations say and do provide displays that can be investigated retrospectively after the fact to determine what is happening. When organisations act, they create structures, constraints and

³²⁷ Weick (1995: 15): Italics not in original text.

³²⁸ Weick (1979: 164).

³²⁹ Craig-Lees (2001: 522).

³³⁰ Weick (1995: 36).

³³¹ Weick (1998: 307); also cited in Herrmann (2007: 18).

³³² Weick (1995: 31).

³³³ Weick (2001: 189).

opportunities that were not there prior to the action. Enacting can also therefore be decisions by trial and error; doing something, see the impact, change and do something else.

The property of enactment is closely linked to the concepts of selection and retention as part of what the organism does.³³⁴ If we re-visit the sense making recipe “how can I know what I think ‘till I see what I said’”.³³⁵ Organisations are presumed to talk to themselves over and over to find out what they are thinking – in this process:

- Individuals and groups within the organisation enacts ambiguous and equivocal “raw talk”, the talk is viewed in retrospect, they make sense through retrospect and then retain or store the knowledge accumulated. By doing this, they reduce equivocality and they find out what has happened – as illustrated in Figure 15.³³⁶

³³⁴ Weick also refers to an organisation as organism (Weick 1979: 134). This reference is interesting when talking about enactment, selection and retention since it relates to the Darwinian idea of natural selection.

³³⁵ Weick (1979: 134).

³³⁶ Weick (1979: 134).

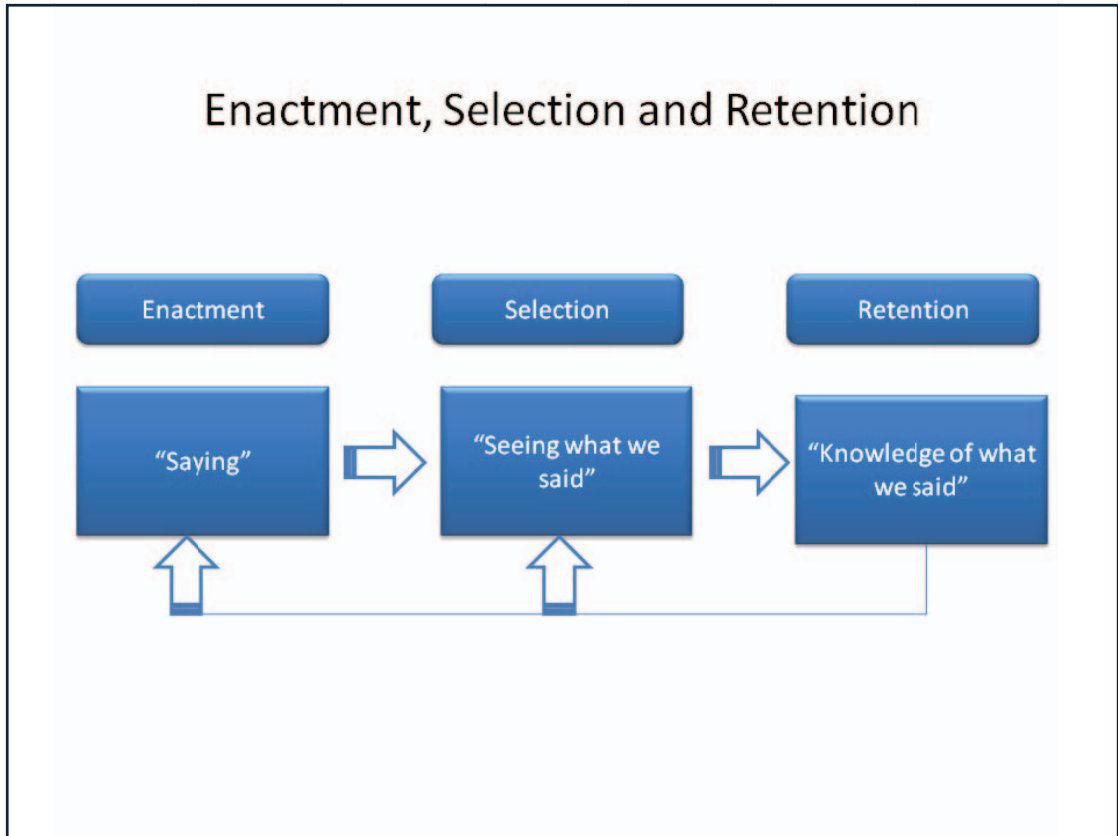


Figure 15: Enactment, Selection and Retention (1)

The same principle can be used for doing (or producing a product or service):

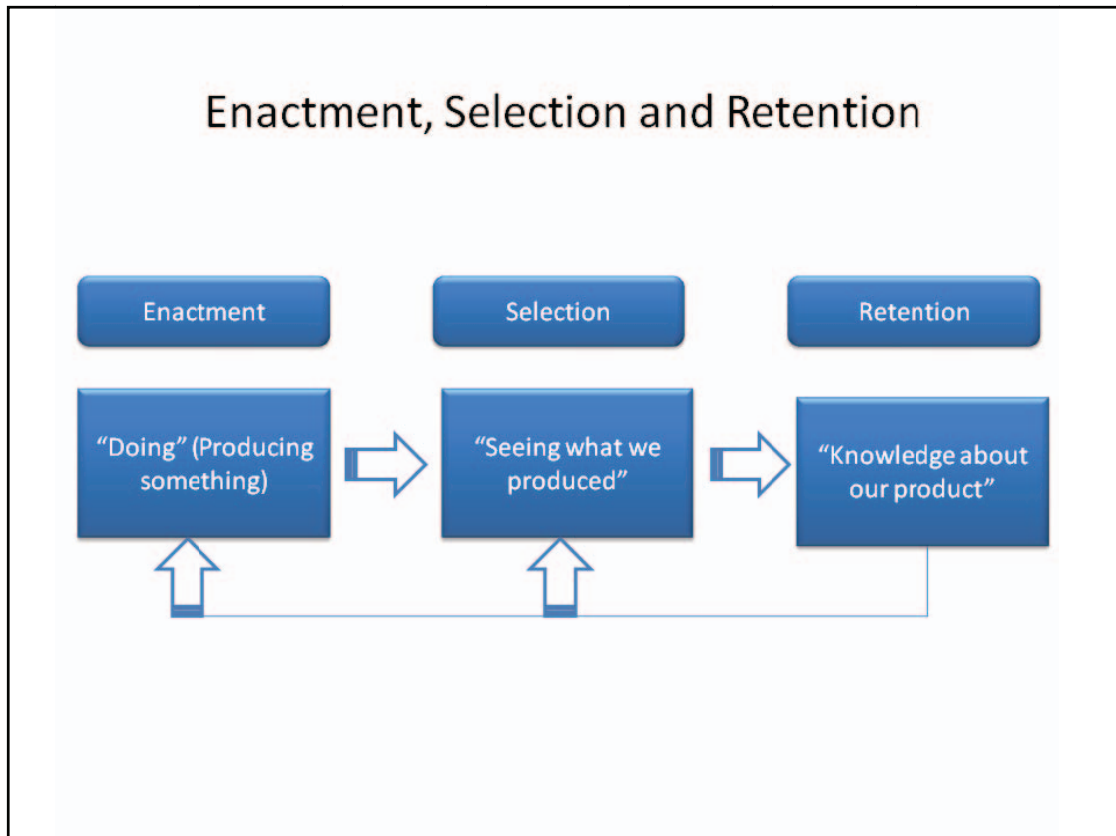


Figure 16: Enactment, Selection and retention (2)

3.3.4. Social

One can easily mistaken sense making for being on an individual level, however, sense making is inherently social: “Sensemaking is never solitary because what a person does internally is contingent on others. Even monologues and one way communication presumes an audience”.³³⁷ Within organisations we can identify networks, shared meanings and common understanding that are developed through communication. Weick³³⁸ uses the levels of sense making identified by Wiley³³⁹ to

³³⁷ Weick (1995: 40).

³³⁸ Weick (1995).

³³⁹ Wiley (1988) cited in Weick (1995: 70-72).

illustrate sense making socially in organisations. Table 1 provides an overview of the levels of sense making on individual and organisational level:

Sense Making Level	Individual	Organisation
Individual	Me, Myself, I (influenced by social factors, culture, life experience, religion, grand narratives, self fulfilling prophecies and my perception of how others perceive me)	Not Applicable
Inter-subjective	Me/You in interaction (dialogue, arguing, communication and narrative in the context of culture and life experiences)	<p>Continued interactions between people. Moving from the “I” in individual sense making to “We” in collective sense making.</p> <p>The level of social reality most suitable for sense making.</p> <p>The move from the individual to collective (from “I” to “we”); from the personal creation of meaning to collective meaning is not as problematic as the explicit versus tacit debate in knowledge management.</p> <p>Sense making is inherently a social process and even if we make sense alone we do it against the backdrop of frames of references that were developed in social interaction and communication.</p>

Sense Making Level	Individual	Organisation
Generic subjective	<p>Generic level – Although we are still thinking about people we cannot provide names (as in the inter-subjective).</p> <p>Dealing with groups (such as “students”, “employees”, “middle management” etc.</p>	<p>The “selves” are left behind in terms of interaction.</p> <p>The concrete human beings are no longer present when we talk about things such as “middle management”.</p> <p>The use of generic frames of reference with standard scripts, standard plots and standard operating procedures.</p>
Extra- subjective	<p>No person in view – we refer to ideas and ideologies “capitalism”, democracy” etc</p>	<p>Symbolic reality</p> <p>“social responsibility” (as example)</p> <p>Larger than life things</p> <p>Organisational values</p> <p>Grand narratives</p>

Table 1: Levels of Sense Making

In the context of sense making as social acts, Dervin³⁴⁰ presents the following sense making relationships:

- Individual relating to self (thinking, observing, personal sense making)
- Individual relating to other individuals (learning, comparing, connecting)
- Individual relating to collectivity (participating collectively)

³⁴⁰ Dervin (2003: 174).

- Collectivity relating to self (collectivity focused on itself)
- Collectivity relating to individual (defined collectivity is focusing on an individual)
- Collectivity relating to collectivity (one defined collectivity relating to another)

3.3.5. Ongoing

Imagine a stream of water flowing, now imagine multiple streams flowing into a river system and throw in some randomness in these flows – that is how we are thrown into streams of complex “stuff”. We are always in the middle of events, projects, initiatives, beliefs, problems, solutions, choices, decisions, interpretations, feedbacks, people, technologies, interactions, words and acts. Duration of these flows never stops and therefore “sensemaking never starts”.³⁴¹ In these flows we cannot stop acting and when we act, our actions impacts on the situation as well as ourselves leading to further action. It is also important in the context of sense making, to note that language is action – if we say something “we create rather than describe a situation... it is impossible to stay detached from whatever emerges unless you say nothing”.³⁴²

The ongoing nature of sense making and the “thrownness”³⁴³ into flows (we are not objectively detached from the flows to make rational inquiries) is central to sense making since we have a natural tendency to stick to absolute categories ignoring continuity leading to misconceptions.

The reality of the “thrownness” into flows becomes noticeable when flows get interrupted. These interruptions are opportunities for sense making. Interruptions

³⁴¹ Weick (1995: 43).

³⁴² Weick (1995: 44).

³⁴³ Weick (1995: 44).

bring emotion into the situation since it is based on what we expected to happen (or not to happen) and can lead to arousal.³⁴⁴

The principle of interruption as sense making moments is illustrated in Figure 17:

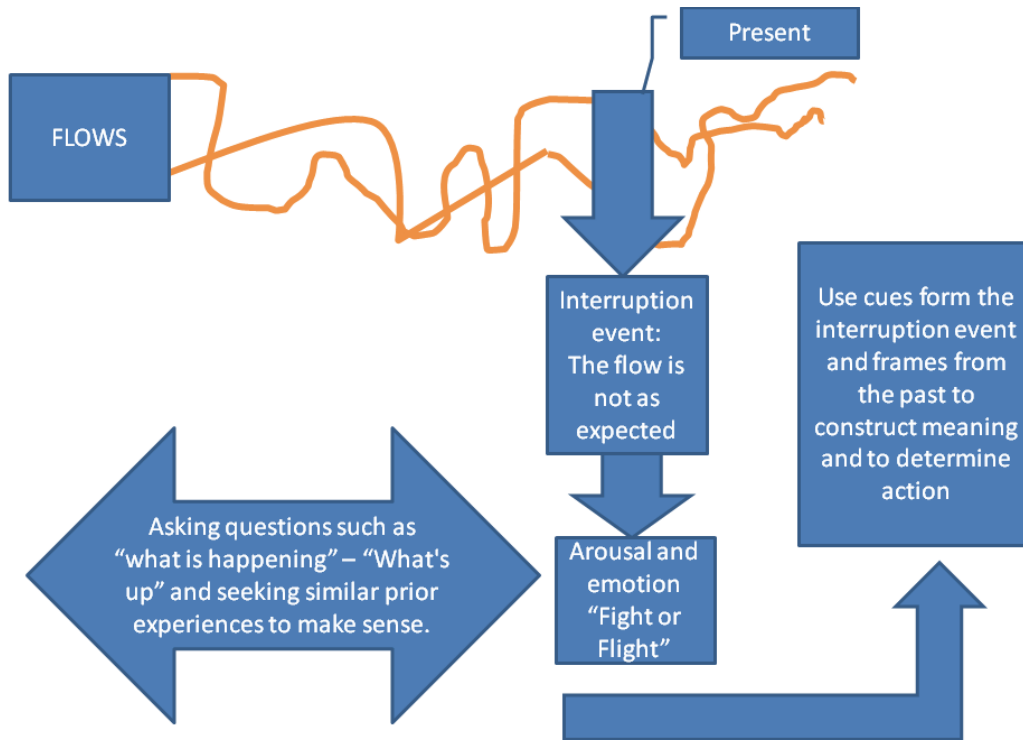


Figure 17: Interruptions and Arousal

3.3.6. Focused on and by Extracted Cues

Sense making starts with noticing, labelling, circling, categorising and bracketing. The sense maker notices things, brackets them and the process of bracketing is assisted by work experience, life experience and existing mental models. These existing mental models coupled with noticing and bracketing assist individuals and

³⁴⁴ Weick (1995: 44-45) uses the psychological concept of arousal in the autonomic nervous system. When an interruption occurs there is arousal that prepares people for fight-or-flight reactions. This arousal is not only prevalent for individuals but also for organisations. “The perception of arousal triggers a rudimentary act of sensemaking. It provides a warning that there is some stimulus to which attention must be paid in order to initiate appropriate action. This signal suggests that one’s well being may be at stake”

groups in taking action.³⁴⁵ ³⁴⁶ The sense maker picks cues out of the current environment and links these cues with existing frames of reference in order to make meaning: “Extracted cues are simple familiar structures that are seeds from which people develop a larger sense of what may be occurring”.³⁴⁷

It is important to note that the cues are associated with search, scanning and noticing and that the cues which get extracted are always based on context (with “frame” being the structuring of context): Sensemaking starts with three elements - a frame, a cue, and a connection - with frames tending to be past moments of socialization and cues tending to be present moments of experience”.³⁴⁸

Cues in sense making processes have a definitive relationship with leadership – the cues provided by a leader (in words and in action) will assist the organisation in making sense.

3.3.7. Driven by Plausibility rather than Accuracy

Weick argues: “accuracy is nice but not necessary”.³⁴⁹

Weick tells the story of a young lieutenant of a small Hungarian detachment in the Alps sent a reconnaissance unit into the icy wilderness. “It began to snow immediately, snowed for two days, and the unit did not return. The lieutenant suffered, fearing that he had dispatched his own people to death. But on the third day the unit came back. Where had they been? How had they made their way? Yes, they said, we considered ourselves lost and waited for the end. And then one of us found a map in his pocket. That calmed us down. We pitched camp, lasted out the snowstorm, and then with the map we discovered our bearings. And here we are. The

³⁴⁵ Weick, et al. (2005).

³⁴⁶ Dervin (2003) refers, in the same context, to an actor “circling” elements.

³⁴⁷ Weick (1995: 50).

³⁴⁸ Weick (1995: 111).

³⁴⁹ Weick (1995: 56).

lieutenant borrowed this remarkable map and had a good look at it. He discovered to his astonishment that it was not a map of the Alps, but a map of the Pyrenees”.³⁵⁰ The moral of this story is that any map will do – it is what you do (action) that is important, not what you plan or the accuracy of you plan.

3.4. Conclusion: Chapter 4

3.4.1. The Link to Knowledge Management

Nonaka defines the information processing paradigm by the absence of the *creation* of knowledge: “The theory of organization has long been dominated by a paradigm that conceptualizes the organization as a system that ‘processes’ information or solves problems. Central to this paradigm is the assumption that a fundamental task for the organization is to determine how efficiently it can deal with information and decisions in an uncertain environment. Yet a critical problem with this paradigm follows from its passive and static view of the organization. Information processing is viewed as a problem-solving activity which centers on what is given to the organization without due consideration of what is created by it”.³⁵¹ Sense making *is in essence about creating knowledge*, breaking previous frames of references and creating new ones.

It will be presumptuous to summarise Weick’s rich images of organising and sense making, but to conclude this chapter and to link sense making to the concept of organisational knowledge management, the following themes are regarded as important.

3.4.2. Simple Structures

Simple social structures are the building blocks for organisational knowledge. The complex exchanges and making of meaning that take place on the inter-subjective level in seemingly unimportant groups is critical for knowledge management. The

³⁵⁰ Holub (1977) cited in Weick (1995: 54).

³⁵¹ Nonaka (1994: 14).

following passage from Weick summarises the importance of these structures for “managing knowledge”: “Most organizations function quite well even though no one knows quite what is going on. As we’ve seen no one needs to know. The coordination is built into simple structures, the assemblage of which creates units more complex than any participant can comprehend. This greater complexity allows these structures to be used to cope with, manage and resolve issues that are more complex than any participant can visualize or articulate”.³⁵²

3.4.3. Organisational Design

Organisational design is a vehicle to accommodate knowledge. To enhance sense making Weick³⁵³ asks the following questions in terms of organisational design:

- Social context: does the design encourage conversation?
- Personal identity: does the design give people a distinct, stable sense of who they are and what they represent?
- Retrospect: does the design preserve elapsed data and legitimate the use of those data?
- Salient cues: does the design enhance the visibility of cues?
- Ongoing projects: does the design enable people to be resilient in the face of interruptions?
- Plausibility: does the design encourage people to accumulate and exchange plausible accounts?
- Enactment: does the design encourage action or hesitation?

³⁵² Weick (1979: 110).

³⁵³ Weick: (2001: 464).

3.4.4. Action not Planning

Action and doing (rather than planning) is pivotal in sense making: “Managers keep forgetting that it is what they do, not what they plan, that explains success. They keep giving credit to the wrong thing – namely the plan – and having made this error, they then spend more time planning and less time acting. They are astonished when more planning improves nothing”.³⁵⁴

³⁵⁴ Starbuck (1993) cited in Weick (1995: 55).

Chapter 5:

Summary and Conclusion

4.1. Introduction: The Quest Continues

The interest in the concept of Organisational Knowledge Management remains. The graph in Figure 18 indicates the number of articles in the Social Sciences Citation Index database of the ISI Web of Knowledge with the words “knowledge management” in the *title* of the article:

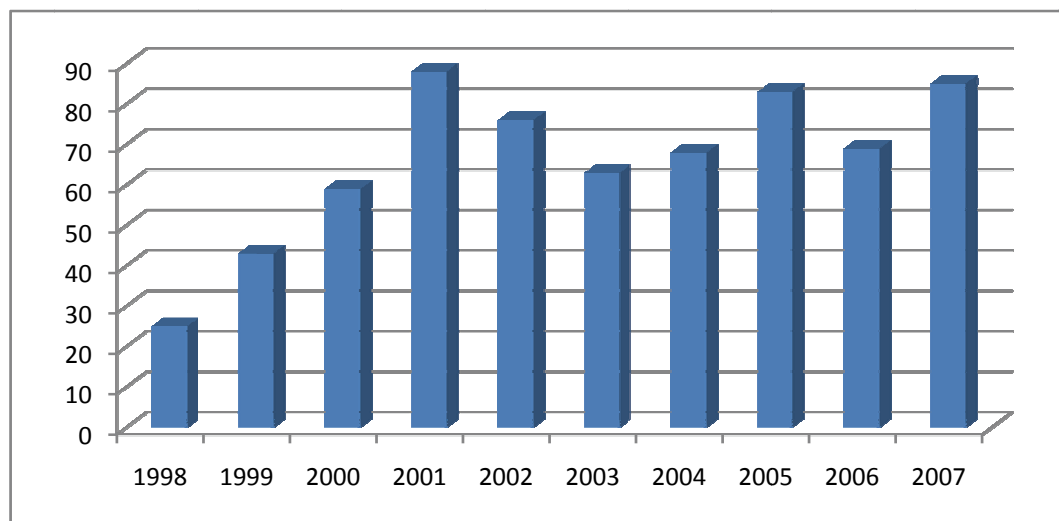


Figure 18: Knowledge Management Articles: ISI Web of Knowledge

The graph shows that there are substantially more articles with knowledge management in the title published in 2007 than 1998.

Similarly, the interest in what constitutes organisational knowledge remains. In 2008 Lloria³⁵⁵ reviews the main approaches to knowledge management and Beesly and Cooper³⁵⁶ present proposals on a *consensus* regarding knowledge management

³⁵⁵ Lloria (2008).

³⁵⁶ Beesly & Cooper (2008).

activities. These types of articles, like this thesis and older articles about the nature of organisational knowledge³⁵⁷ all explore different views on the concept and emphasise the complex nature of knowledge.

Social commentary about knowledge management is also present:



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Figure 19: Dilbert Cartoon³⁵⁸

Although in a humorous context, this commentary addresses issues inherently present in the “thing”/“flow” debate such as the roles for “managing” knowledge in organisations.

4.2. The Research Question

This thesis started off with the following research questions:

Is knowledge in an organisational context:

1. A discrete, tangible item (or object or “stuff” or “thing”) that can be “managed”?; or is it

³⁵⁷ Wigg (1997c); Tsoukas & Vladimirou (2001); Swan, Newell et al. (1999); Allee (1997b); Broadbent (1998); Alavi & Leidner (2001).

³⁵⁸ Retrieved September, 17 from www.Dilbert.com.

2. More dynamic – a flow, embodied in human cognition, socially constructed by individuals, that might be facilitated, assisted or enhanced in an organisational context but never actually “managed”?; or is it
3. Actually both of the above?

This was followed by a secondary question:

What is it that we actually want to manage? – is it the codified knowledge artefacts embedded in procedures, rituals, documents and (especially) technology or is it the human beings in a social context who generate knowledge both individually and collectively?

4.2.1. Light as a Wave and a Particle

Allee³⁵⁹ addresses the same issues by referring to the paradox about the properties of light in quantum physics where there are two equally valid sets of experimental processes. The one set of experiments proves that light is a particle (a photon) and the other set of experiments proves that light is a wave (a process). To address the paradox, the argument is that neither are properties of light itself but rather both are properties of our *interaction* with light. The result is a scenario where, depending how we look at it, light is both a particle and a wave. It is the exactly same with how we view knowledge – it is not whether knowledge is a “thing” or a “flow” but how we view knowledge *in relation* to other elements like action, performance, competitive advantage, learning, complexity, systems, culture, identity and life in a specific space and moment time. Our view of and relationship with knowledge will change depending on our definition of what we want to achieve with knowledge in an organisational context. Knowledge is thus both a “thing” and a “flow” and we want to manage “assets”, “brains”, people, technology and relationships. It also extends to the question of the definition of data, information and knowledge and their complex inter-relationships. The issue is not the definitive definition of what these concepts

³⁵⁹ Allee (1997a).

represents and the exact nature of the inter-relationship but how we view the concepts and their relationship in the context of what we need to achieve or want to do.

4.2.2. More Paradoxes

These are many paradoxes since these concepts are inherently complex. Consider the case of knowledge (as “thing”) being managed well, leading to accessible stocks of knowledge, acquisition of new knowledge, roles for the management thereof and technology to, efficiently, provide and deliver this knowledge to people. It is these well managed stocks of knowledge, these well defined organisational frames of references of past experiences that will then become the biggest threat to innovation – we will fall back (or rely) on our existing knowledge, limiting our ability to create new knowledge.

Memory is the enemy of innovation and creativity. It is this paradox that is important in the context of the selection of authors discussed in this thesis – whilst Davenport and Prusak³⁶⁰ provide us with a practical approach to “manage” knowledge, Weick³⁶¹ emphasises the fact that less information and less knowledge is, in many cases, better. Whilst Davenport and Prusak provide guidelines on the acquisition of knowledge, Weick draws attention to the fact that we act first and then think.

The second paradox is that knowledge management is many things at the same time – the concept cannot be pinned down – it is not a discipline but a theme. In the context of this thesis knowledge is, at the same time, part of all the themes listed below.^{362, 363}

³⁶⁰ Davenport & Prusak (1998).

³⁶¹ Weick (1995).

³⁶² Note: These are not disciplines or fields of study or areas of scientific interest or schools of thought per se but “themes” or “things” that re-occur in the efforts of making sense of knowledge.

³⁶³ My personal views on the concept of knowledge management have changed radically since 2004. From starting off with the idea of knowledge management as discipline to a belief in 2008 that knowledge management is “not something on its own” – it is rather “managing” and “emergence” or perhaps as Weick (1979) calls it “organising”. We are not organising “something” - we are simply organising. We are not managing knowledge inherently; it is part and parcel of “managing”. The latter might be interpreted as being contradictory to the theme developed in paragraph 4.3 where I argue for

- Complexity
- Systems Thinking
- Cognitive Psychology
- Resource based theories of the firm
- Organisational Design
- Organisational Culture
- Information processing view of organising
- Economics
- Philosophy
- Information and Communications Technology (ICT)
- Information Management
- Theory of Communication
- Language and Linguistics

4.3. Addressing the Sins of Knowledge Management

Fahey and Prusak³⁶⁴ provided us with a list of eleven deadly sins when dealing with organisational knowledge management. Four of these sins are of particular relevance to this thesis with a focus on “organisational knowledge”.

organisational definitions of knowledge but it serves as an example of the dissonance in trying to make sense of knowledge and framing the nature of what this thesis is dealing with.

³⁶⁴ Fahey & Prusak (1998).

4.3.1. Not Developing a Working Definition of Knowledge

If the view is that knowledge is both a “thing” and a “flow” then we need a working definition within an organisation as to what we want to manage. Our view of what we want to manage will lead to methods and tools used to manage it a both stocks and processes. Although it is a task of some magnitude it should be done. As stated by Fahey and Prusak “The tendency to avoid grappling with what knowledge is should not be surprising. There is little in the education, training, or organizational experience of managers that prepares them for the deep-seated reflection and understanding required by the concept of knowledge”.³⁶⁵ In the context of this thesis, organisational definitions³⁶⁶ of what they want to manage will lead to choices on codification (*al la* Davenport and Prusak) or creating shared meaning through sense making.

4.3.2. Emphasising Knowledge Stock to the Detriment of Knowledge Flow

“When knowledge is equated with information, it should not be a surprise to find it defined principally as a stock rather than as a flow. It is viewed as a thing or object that exists on its own, that can be captured, transmitted among individuals, and stored in multiple ways within the organization. Indisputably, this ‘stock’ perspective tends to dominate organizations’ thinking about knowledge. This has come about in part because several early examples of knowledge ‘success’ focus on articulated and documented stocks of knowledge”.³⁶⁷ In contrast, knowledge should also be seen as an integral and fundamental part of the flux we find ourselves in – we are always in the middle of a million things, events, interactions and people – knowledge should be seen as constant flux and change. Knowledge processes do not take place “out there”, outside of ourselves or outside managers – we all form part of the process all the time.

³⁶⁵ Fahey & Prusak (1998: 266).

³⁶⁶ Fahey & Prusak (1998) discuss a working definition (singular). I would like to believe that there will be multiple definitions within an organisation of what knowledge constitutes and therefore use the plural *definitions*.

³⁶⁷ Fahey & Prusak (1998: 266).

4.3.3. Downplaying Thinking and Reasoning

If we want to see Organisations as “knowledge systems”³⁶⁸ we need to see that understanding is not so much in the head but in “situated practice”³⁶⁹. Individuals understand and act drawing on socially defined values and beliefs within circumstances that necessitate thinking and reasoning.

4.3.4. Substituting Technological Contact for Human Interaction

Although IT is a wonderful facilitator of data and information transmission and distribution, it can never substitute for the rich interactivity, communication, and learning that is inherent in dialogue. Knowledge is primarily a function and consequence of the meeting and interaction of minds. Human intervention remains the only source of knowledge generation.

4.4. Assimilating Thing and Flow

In combining the views of “thing’ and “flow”, I would like to propose two models, the first dealing with the relationship between data, information and knowledge and the second integrating views of Weick³⁷⁰ and Davenport and Prusak³⁷¹ to manage knowledge in organisations.

4.4.1. Data, Information and Knowledge

In addition to the authors discussed in chapters 3 and 4, the model on data, information and knowledge (see Figure 20) also contains elements proposed by Boisot.³⁷² In the proposed model, information builds on data and knowledge on information but there is a recursive element with knowledge becoming information

³⁶⁸ Tsoukas & Mylonopoulos (2004: 7).

³⁶⁹ Tsoukas & Mylonopoulos (1994: 7).

³⁷⁰ Weick (1995).

³⁷¹ Davenport & Prusak (1998).

³⁷² Boisot (1998).

again and the actor interacting with data, information, knowledge and the environment through the perceptual filters of the properties of sense making. The emphasis is on circular flows.

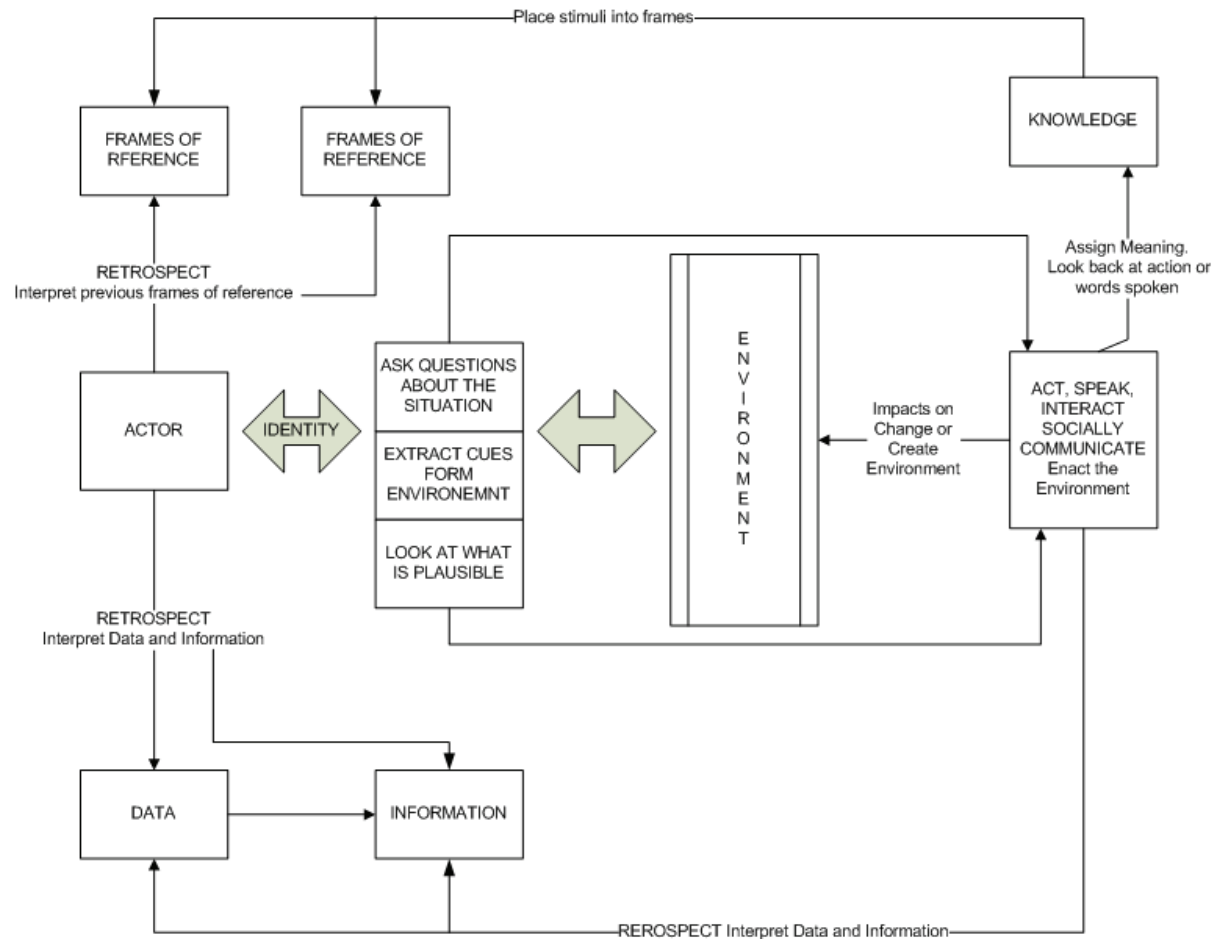


Figure 20 Data, Information and Knowledge

4.4.2. Approach to Organisational Knowledge Management

The second model (see Figure 21) combines Weick's sense making recipe with concepts developed by Davenport and Prusak about knowledge acquisition, codification and storage:

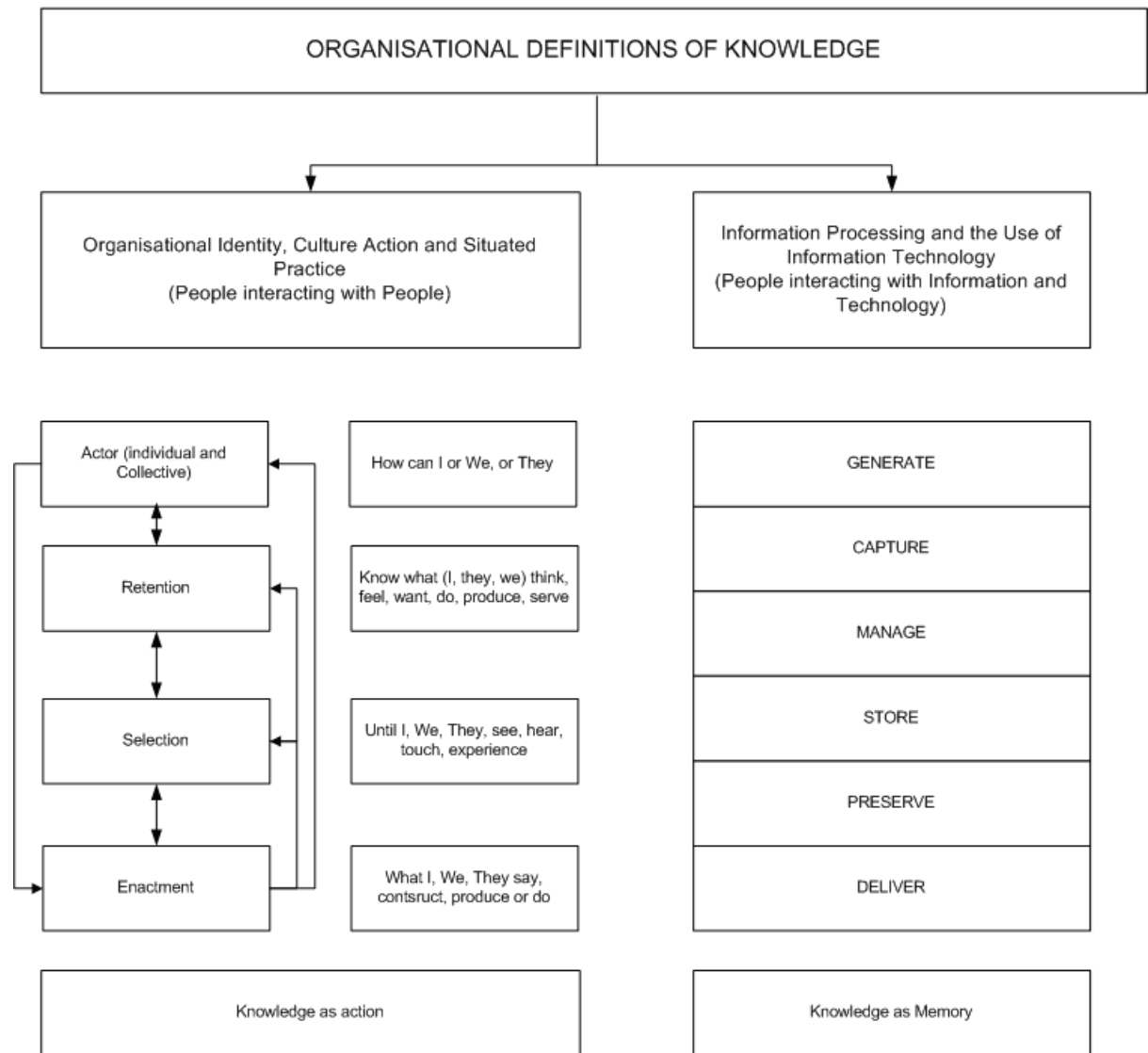


Figure 21: Proposed Model

4.5. In Closing

Perhaps the focus should not be “thing” or “flow” or “organisational knowledge” but relationships. In the words of Karl Weick: “Most things in organizations are actually relationships, variables tied together in systematic fashion. Events therefore depend on the strength of these ties..... The word organization is a noun and it is also a myth. If you look for an organization you won’t find it. What you will find is that there are events, linked together, that transpire within concrete walls and these sequences, their

pathways, and their timing are the forms we erroneously make into substances when we talk about an organization”.³⁷³

³⁷³ Weick (1979: 88).

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Appendix A: Examples of Concepts linked to Typologies

Table 2 below provides an overview of selected authors' concept of knowledge with comments linking these concepts to the generational typology as outlined in Chapter 2 (paragraph 1.12) and illustrated in Figure 22:

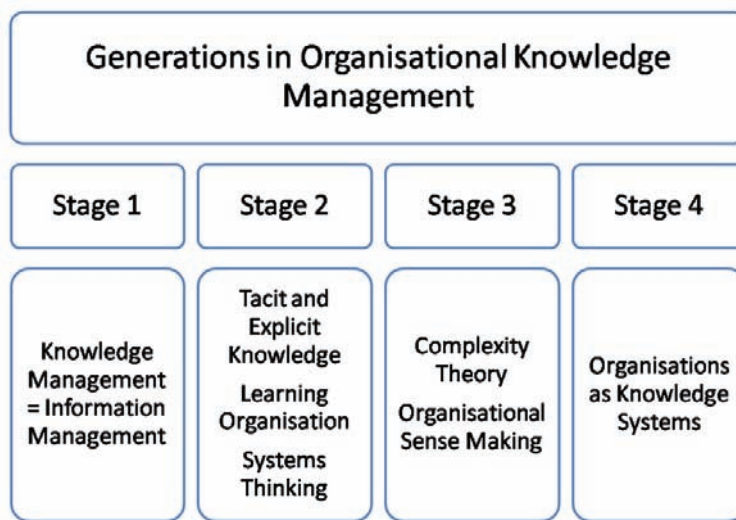


Figure 22: Generational Typology

Author(s)	Concept	Comments
Broadbent	“Knowledge Management is about enhancing the use of organizational knowledge through sound practices of information management and	Example of a Stage 1 definition (as outlined in the Generational Typology) linking knowledge management closely to

Author(s)	Concept	Comments
	organizational learning. The purpose is to deliver value to the business." ³⁷⁴	information management.
O'Dell and Grayston	<p>"When explicitly managed, organizational knowledge is used to accomplish the organization's mission. Knowledge Management is therefore a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance."³⁷⁵</p> <p>"Knowledge is information in action"³⁷⁶</p>	Example of a Stage 1 definition where the concepts of information and knowledge can be used interchangeably.
Gates	"Knowledge management is nothing more than managing information flow; getting the right information to the people who need it so they can act on it quickly" ³⁷⁷ .	<p>Similar theme as the definition of O'Dell and Grayston above – knowledge similar to information.</p> <p>As with O'Dell and Grayston action is also linked to the outcome.</p>

³⁷⁴ Broadbent (1998: 24)

³⁷⁵ O'Dell & Grayson (1998: 6)

³⁷⁶ O'Dell & Grayson (1998: 5)

³⁷⁷ Gates (1999: 238)

Author(s)	Concept	Comments
Allee	<p>“Knowledge is experience, concepts, beliefs, or information that can be shared”.³⁷⁸</p>	<p>Example of a Stage 2 definition with a split between the individual and the organisation. The collaborative element can place this definition in the Behavioural Classification as defined by Earl³⁷⁹</p>
Stewart	<p>"Knowledge Management is knowing what we know, capturing and organizing it, and using it to produce returns".³⁸⁰</p>	<p>Example of a Stage 1 definition – knowledge as a tangible item to be captured and managed. The definition encompasses knowledge as “thing” to be managed as organisational resource. The definition also contains elements of the Economic (Commercial School) classification defined by Earl.³⁸¹</p>
Van Den Hoven	<p>"The premise of knowledge management is that by combining the information contained in an enterprise along with its experiences and insights knowledge can be created. Knowledge management addresses the need to facilitate the dynamic gathering</p>	<p>A Stage 1 definition with some elements related to experiences and insights (moving to stage 2 of the generational typology) but with an emphasis on the</p>

³⁷⁸ Allee (1997a: 27)

³⁷⁹ Earl (2001).

³⁸⁰ Stewart (2003: 112)

³⁸¹ Earl (2001).

Author(s)	Concept	Comments
	<p>and sharing of information, ideas, insight, best practices and business opportunities... Therefore the ability to effectively manage the enterprises information resources is a prerequisite to opening up the enormous pool of knowledge."³⁸²</p>	<p>manageability thereof.</p>
Stacey	<p>“Knowledge cannot be managed, and there is no need to manage it, because knowledge is participative self organizing processes patterning themselves in coherent ways.”³⁸³</p>	<p>Example of a stage 3 or 4 definition moving away from the notion of knowledge as “thing” to self organisation and complexity.</p>
Standards Australia	<p>Knowledge management has emerged from a variety of other disciplines. Its foundations lie in the management of explicit knowledge including information, documents and records as well as the management of tacit knowledge including networks, skills transfer and learning. Its strength lies in its power to combine the organisational elements of people, process, technology and content into a coherent approach to address gaps in organizational capability³⁸⁴.</p>	<p>Definition covering stages 1 and 2 (emphasis on information and tangible elements as well as on tacit dimension).</p>

³⁸² Van Den Hoven (2001: 80)

³⁸³ Stacey (2001: 5)

³⁸⁴ Standards Australia (2005: vii).

Author(s)	Concept	Comments
Sveiby	<p>“Knowledge is a human faculty, not something that can be "managed", except by the individual him/herself. A better guidance for our thinking is therefore phrases such as "to be Knowledge Focused" or to "see" the world from a "Knowledge Perspective". To me Knowledge Management is: The Art of Creating Value from Intangible Assets.”³⁸⁵</p>	<p>Example of a stage 3 definition but with a reference to intangible assets that indicates something that can be “managed”.</p>
March	<p>“Knowledge is a social construction. It is developed and certified within social institutions. Those institutions help to make knowledge both valid and reliable, valid in a sense that it portrays reality correctly and reliable in the sense that it is shared and reproduced among knowledgeable people.”³⁸⁶</p>	<p>This could serve as an example of moving to stage 4 of the Generational Typology where the emphasis is of the collective construction and reproduction organisationally.</p>
Gupta et al.	<p>"Knowledge management (KM) is a process that deals with the development, storage, retrieval, and dissemination of information and expertise within an organization to support and improve its business performance. Organizations are realizing that knowledge is a crucial resource for organizations and it should be</p>	<p>Example of a Stage 1 definition – interchange ability of information and knowledge</p>

³⁸⁵ Sveiby (2001)

³⁸⁶ March (1994: 240)

Author(s)	Concept	Comments
	managed judiciously. Organizations need to harness knowledge not only to stay competitive, but also to become innovative". ³⁸⁷	
Gartner Group	Gartner's definition of knowledge management (KM) was released in 1998 as "the creation, capture, organization, access and use of knowledge." We also believe that KM does not exist without collaboration in fact, we define collaboration as the heart of the KM process model." ³⁸⁸	Apart from the emphasis on collaboration, the main focus is on knowledge as tangible item that can be captured and managed.
Skryme	"Knowledge management is the explicit and systematic management of vital knowledge and its associated processes of creating, gathering, organising, diffusion, use and exploitation. It requires turning personal knowledge into corporate knowledge that can be widely shared throughout an organisation and appropriately applied." ³⁸⁹	Combination of elements of stages 1 and 2 of the generational typology and elements of the behavioural school.

Table 2: Concepts of Knowledge

³⁸⁷ Gupta et al. (2000: 17)

³⁸⁸ Logan (2006: 2)

³⁸⁹ Skryme (1997)