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Synthesising Sensemaking Approaches for Understanding Distributed Knowledge in Organisations

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Abstract

Despite the importance of knowledge and knowledge management to business, most current business theory and practice approach knowledge management in a limited fashion more relevant to manipulation of information and data than to a multi-dimensional phenomenon such as knowledge. This paper presents a people-centric and social alternative methodology for exploring knowledge management and developing information systems through the Sensemaking Framework of Knowledge in Organisations. This methodology is based on a synthesis of seminal theories including Cecez-Kecmanovic's Sensemaking theory (2000) which was developed from works by Weick (1995), Wiley (1994) and Ryle (1949), and Tsoukas' (1996) theory of the firm as a distributed knowledge system.

Keywords

Sensemaking, knowledge, knowledge management, methodology, distributed knowledge, information systems implementation, information systems change.

INTRODUCTION

As the information era develops into the knowledge era, knowledge and knowledge management become increasingly important to business. However as most current business theory and practice approaches to knowledge and knowledge management are legacies of the 'information era' approach, most knowledge management methodologies reflect a limited approach more relevant to manipulation of information and data than to a multi-dimensional phenomenon such as knowledge. With a focus on information and the manipulation of information and data to inform the knowledge workers and decision makers of a business enterprise, the focus of methodological approaches centres on databases and software that can collate and manipulate the required data and information whether for simple information storage or for more sophisticated "decision support systems" or "knowledge systems". Knowledge, however, is a much broader and more complex issue than a mere collation of information, and various disciplines are contributing to a more multi-dimensional approach to an understanding of knowledge, knowledge work and knowledge workers that need to be considered when developing a new generation of information systems to support knowledge management, and for planning knowledge management practices that will supplement and support information systems development and change in a more effective manner than is common at the moment.

This paper investigates and discusses theories that illuminate the people-centric and social nature of knowledge and discusses the impact that this broader understanding must have on approaches to knowledge management and its supporting information systems in both the context of "managing knowledge" and of "managing knowledge workers". To be more exact, the paper is founded on the concept that neither knowledge nor knowledge management can be "managed" but that an organisation can be managed more effectively to explore, find, nurture, develop and use the knowledge distributed throughout the organisation, and can also be managed in a fashion conducive to stimulating effective, creative, collaborative and productive work by knowledge workers, and that such different methodological approaches will lead to more effective development of information systems and handling of information systems change and implementation than the current common problematic challenges and failures of information systems implementations and rollouts. Consequently the paper presents an alternative methodological approach in the Sensemaking Framework of Knowledge in Organisations.

METHODOLOGY

This paper arises from research undertaken during a four year PhD study in which a new methodological approach to information systems knowledge management was developed, extending Cecez-Kecmanovic' Sensemaking model (Cecez-Kecmanovic, 2000; Cecez-Kecmanovic & Jerram, 2002) which was developed from a synthesis of works by Weick (1995), Wiley (1994) and Ryle (1949) and applying it to Tsoukas' theory of the organisation as a distributed system (Tsoukas, 1996). The methodology, labelled the Sensemaking Framework of Knowledge in Organisations (Jerram, 2005) was used in an interpretive approach and trialled on two case studies first independently, then comparatively. Each case study was of an information- and knowledge-intensive

organisation undergoing different stages of information systems change. One was a university (called the 'University of Eastern Australia' for the purposes of the study) that underwent severe difficulties and interrupted work practices and productivity in the implementation of critical information systems changes and the other was the Australian Bureau of Statistics - an internationally recognised world leader in knowledge management that handled a large entire systems rollout through their knowledge management initiative. For each case study, twenty-five participants from all levels of staff were interviewed about their understanding of - and experiences with - the information systems changes and the knowledge management practices of their organisation, and the impact these had upon their work. The transcribed interviews were coded in a four phase interpretive coding pattern to organise and reduce the material, then the Sensemaking Framework was applied to the material remaining in these reduced interpretive codes. The results of the two case studies and the comparative study between them are published elsewhere, and the scope of this paper does not permit discussion of the case study application of the methodology. Therefore, for the purposes of this paper, it is simply stated that this methodology has been trialled successfully on two separate cases and comparatively, and only the methodology itself will be presented here.

COMPONENTS OF A NEW METHODOLOGY

The Sensemaking framework is based on the works of Weick (1995), Wiley (1994), Ryle (1949) on Sensemaking and of Cecez-Kecmanovic's Sensemaking Model which is based on these works (Cecez-Kecmanovic 2000; Cecez-Kecmanovic & Jerram, 2001, 2002). These works on Sensemaking are synthesized with the work of Tsoukas on organisations as distributed knowledge systems (Tsoukas 1996; Tsoukas & Vladimirov, 2000) and of Tsoukas and Vladimirov's (2000) work on the personal nature of knowledge, based on Polanyi's seminal work (1962).

The organisation as a distributed knowledge system

As a primary purpose of the methodology is to analyse how a knowledge-intensive organisation approaches knowledge management, and the role of knowledge management within the organisation, it is important, as Tsoukas and Vladimirov (2001, p.4) state, to define what is meant by "the organisation" and actually have a "theory of organization". The Sensemaking framework builds upon the specific definition for organisation provided by Tsoukas (1996), in which he builds the picture of an organisation as a "distributed knowledge system". A common current view perceives organisations as having fixed behaviours and bounded knowledge which can be known and acted upon by a single decision maker but Tsoukas posits (1996) that knowledge is necessarily dispersed throughout any organisation, is never fixed but is fluid and conditional, and needs to be seen as action-oriented rather than static-information (more concerned with the services that can be performed through the resource than merely with the resource).

Tension (which must be managed) arises when individual knowledge must function with an organisational context, and three aspects of this tension can be recognised and addressed when the firm is regarded, not as monolithic, but as a distributed knowledge system (Tsoukas, 1996). First, there are "normative expectations" created for the individual's role, function or position by the organisation (through routines, explicit rules, previous training, how the role was learned...) which are usually in tension with the 'disposition' (habitus) of the person in the role. 'Disposition' is the second aspect and refers to the personalised systematic thinking patterns of the person that arise from their history of their previous socialisations. This is the element that immediately makes it likely that two people trained in the same role by the same person within the same organisation will approach the same task in a dissimilar manner. The third aspect to consider is the "situational-specific context". This involves recognising that the exact situation and circumstances arising at any given moment, particularly as it relates to interrelationships with other persons involved, can create specific tensions and often demands heuristic recognition and application, and even creation of, knowledge. Against this daily flux that stimulates differences, there is the an "unarticulated background knowledge" that introduces an element of commonality and the ability to relate, understand and share knowledge. This is seen in industry-specific lexicons. It is the background knowledge that is taken for granted but which gives a common ground for shared understandings and meaningful interrelationships. Consequently, an organisation is not a single fixed entity with a propositional resource called 'knowledge' that resides in a single person's head. Knowledge is decentralised and distributed throughout the organisation in both explicitly understood and acknowledged routines, habits and actions, and in unarticulated tacit and heuristic knowledge that is highly personal to the workers, often unrecognised, and frequently improvisational as no one knows at any one time what knowledge will be needed when or by whom. Thus a firm can be seen to be a distributed knowledge system (Tsoukas, 1996).

The view of the organisation as a distributed knowledge system acknowledges that no one person can know all that an organisation needs to know and recognises the unpredictability of knowledge and organisational need. Thus there is always a creative or improvisational element required of knowledge and the persons who exercise it. There is also a relational or inter-relational dimension as humans interact with humans, each bringing their own

personal history and habitus to knowledge, actions and relationships. To this is added the dimension of heuristic or improvisational knowledge, which is highly individual and critical to the organisation's ability to function with flexibility and spontaneity to meet new challenges such as occur daily in any organisation. Such a view takes into account the changeability and variability of daily or unexpected events, and the individuality of the persons who comprise an organisation, so a balance is struck between the normalisation of behaviour to meet organisational expectations and to fit with standardised norms and routines, with the versatility that comes with human personality and experience and the added variability of interrelationships and improvisational responses to a continually changing human and situational environment. Thus, the concept of the organisation as a distributed knowledge system permits a new approach to knowledge management analysis and planning different than common views of the organisation that usually assume a central core of knowledge within a bounded field.

To deal with an organisation as a distributed knowledge system requires new analytical approaches, as this concept raises different questions than those asked from a perspective of knowledge that is centrally located or owned. Where there is a view of organisational knowledge belonging to a central core, questions such as "how can we extract knowledge from our employees?" will be asked but where it is seen as distributed, personal and tacit, the question will change to "how can I encourage trust and facilitate knowledge sharing between the team members?" Such a change in questions and focus will inevitably lead to new perceptions and directions in knowledge management and supporting information systems in response to this different view of the nature of knowledge. This understanding of the nature of knowledge also explains the frequently unexpected organisational memory loss that occurs as the unintentional consequence of change during organisational restructures and retrenchments. Such organisational memory loss is unexpected when the organisation views knowledge as a centralised item which can be captured, stored and held by management and by databases but is an obvious and inevitable consequence of losing the persons who hold the knowledge, particularly the tacit and heuristic knowledge, in a distributed knowledge system.

The personal nature of knowledge

One of the fundamental concepts underlying the Sensemaking Framework for purposes of knowledge management and information systems development is a developed understanding of knowledge as distributed, personal and tacit. This concept is founded on Polanyi's thesis (1962) that all knowledge is personal knowledge and on the definition developed by Tsoukas and Vladimirou, (2000) who define knowledge as "the individual ability to draw distinctions within a collective domain of action, based on an appreciation of context or theory, or both" (2000, p.8). The critical points in this definition are: individual, draw distinctions, collective domain of action, context, and theory. [1] Knowledge is personal or individual, even in an organisational context. [2] The ability to draw distinctions and make judgements is a sophisticated level of skill or knowledge-in-use that separates, as few definitions do, the difference between information and knowledge. [3] Although individual, knowledge is acquired socially and operates within a collective domain of communally created understandings and definitions and domain-specific actions. [4] Knowledge is acquired in context as a socially mediated and situationally located interaction. [5] Knowledge, as described in [2], is exhibited by the ability to generalise theory from one context to another appropriately.

In a simplistic sense, knowledge becomes organisational knowledge in the common sense way of knowledge working within an organisational context but this is an inadequate view with which to work (Tsoukas, 1996). More meaningfully, knowledge becomes organisational knowledge when individuals are drawing upon a body of generalised facts and rules that are produced by the organisation in which they are working. To organise is to order, regulate, generalise and typify. Typologies of knowledge are created within organisations, creating formalised structures and typical general ways of doing things, specific to that organisation. These provide guidelines by which all organisational members can themselves generalise across contexts within the organisation. However rules and structures exist for purposes, and no set of formalised rules or structures is ever specific, comprehensive and adequate enough to meet all situations. Nor can rules apply themselves and universally state, with accuracy, when, where and how they should be deployed. All application of rules and structures depend on human judgement to determine use and applicability beyond the simplest if-this-then-that situations, using the knowledgeable ability to draw distinctions (Tsoukas & Vladimirou, 2000). This human judgement is usually developed from the collective understanding created by the community of practice (Wenger, 1998; Wenger, McDermott & Snyder, 2002; Brown & Duguid, 2002) in which they participate.

Instrumentalised knowledge

Knowledge is not only personal it needs to be instrumentalised to be used as a tool - so assimilated that attention can be diverted from the tool or any subsidiary particulars of the tool, to the object of its use. Thus "organisational knowledge is the ability of organisational members to draw distinctions" in the process of their work in specific contexts by applying generalised rules and actions understood by collective understanding and experience (Tsoukas & Vladimirou, 2000, p.8). The more such rules and actions are instrumentalised and experiences are

reflected upon and assimilated, the more organisational members will be able to concentrate on the focal point of the tasks at hand (Tsoukas & Vladimirou, 2000). KM has a double role in this respect, to allow individual's knowledge to become instrumentalised and assimilated for their own use and purpose, and also to be able to understand and communicate such instrumentalised knowledge to facilitate learning by others. The challenge for KM is to articulate and inscribe explicitly some aspects of the mental model of the task. The role of the inscription [actor's conceptualization of the task] in this context is to reveal more of the knowledge implicit in work practices. Such an inscription can be considered organizational knowledge as it encodes facts about the activity and articulates aspects of the implicit understanding of the task (Burstein & Linger, 2003, p. 298-299).

Organisational knowledge management praxis

Organisational knowledge management is a four-fold practice as described by Tsoukas and Vladimirou (2000). It is an iterative process involving [1] application, [2] improvisation, [3] formalisation and [4] codification. This is the core of organisational knowledge yet is not what is usually considered in KM practice. KM practice frequently focuses on the ability to manage codified formal knowledge through information communication technologies (ICT). Organisational knowledge requires a different kind of management - one that is focused on developing social networks, trust, and a collaborative and communicative environment that will foster a community of practice. Whatever the core business processes of an organisation the personnel on the ground floor who deal with the product and the client are critical components of the organisation's success and hold much of the crucial knowledge of the organisation developed through engagement, experience and social networking. The role of KM is to "...produce true, coherent organizational knowledge (which is quite distinct from an organization's knowledge - the scattered, unco-ordinated insights of each individual in its community of practice)" (Brown & Duguid, 2002, p.27). From this perspective KM needs to recognise that each member of the organisation is an individual who is a contributing member of the community of practice that generates 'coherent organizational knowledge'.

SENSEMAKING FRAMEWORK - ORIGINS AND DEVELOPMENT

In Sensemaking methodology, it is recognised that individuals socially negotiate their conceptualisation of the world - making sense of the world around them and the events in which they participate (Weick, 1995; Tsoukas & Vladimirou, 2000; Cecez-Kecmanovic, 2004, 2000; Cecez-Kecmanovic & Jerram, 2002; Dervin, 1999). However Sensemaking is a variable approach, and the way an individual makes sense of the world will inevitably affect and be affected by the social Sensemaking around him or her. "Sensemaking is grounded in both individual and social activity, and whether the two are even separable will be a recurrent issue" (Weick, 1995, p. 6). If the concept of the inseparability of individual and social activity is accepted, then approaches to knowledge management will be significantly affected.

The Sensemaking model (Cecez-Kecmanovic, 2004; Weick, 1995) identifies four levels of Sensemaking in organisations: [1] the intra-subjective Sensemaking by an individual, [2] inter-subjective Sensemaking by a group of people engaged in interaction, [3] generic-subjective Sensemaking involving maintenance and (re)production of social structure, and [4] culture as an extra-subjective level. At the intra-subjective level, the individual's person, personality, character, values, beliefs, experience, education, etc are what shapes that individual's perceptions and interpretations by which they make sense of their world, themselves, other people and events. "Sensemaking in organizations begins with the personal perspectives individuals use to understand and interpret events that occur around them" (Tan & Hunter, 2002, p. 40). It is the individual intra-subjective level that makes all the other 'supra individual' levels, possible. Once individuals come together to communicate, to engage in socialisation and develop mutual understanding of a situation their Sensemaking becomes inter-subjective. Through the social interaction newly-created shared understandings emerge, often leading to innovation and knowledge co-creation. Collective mind emerges when group members interact with each other with heed, paying attention to each others' views, perceptions, feelings, needs and actions. In its ideal state this can be recognised as 'collective mind creating collective knowledge' (Weick & Roberts, 2001) but where knowledge is inter-subjectively created and held without 'heedfulness' or the focused intensity of collective mind, it can be depicted as 'social interaction' and can be considered 'inter-subjective creation of collective knowledge'.

Within an organisational setting, however, there are structures, roles, norms, rules, policies and hierarchies that have generic meaning for the members of an organisation. Organisational members, irrespective of their participation in their creation, share these generic meanings. At this level of Sensemaking, called generic-subjective (Weick, 1995), there are normalised behaviours that are looked for and expected. Knowledge created and maintained at this generic-subjective level characterises an organisation, distinguishes it from other organisations and enables it to develop a range of responses to changes in its environment. As such it is a key source of stability and continuity for an organisation. Culture, as a symbolic reality present in customs, stories, myths, metaphors, values and language of an organisation represents the extra-subjective level of Sensemaking. Organisational culture provides a reservoir of background knowledge that makes understanding at all other Sensemaking levels possible. Unlike organisational knowledge and social structure at the generic-subjective

level, knowledge embedded in organisational culture is usually implicit, assumed and taken-for-granted. Consequently, it is also usually unrecognised and unchallenged unless identified and addressed.

Sensemaking Level	Nature of Knowledge	
Extra-subjective Sensemaking or culture level	Knowledge embedded in organisational culture	A background stock of tacit, taken-for-granted beliefs, assumptions, values, norms, habits and traditions.
Generic-subjective Sensemaking or organisational structure level	Organisational knowledge – generic meanings and social structures	Organisational roles, norms, rules, structures, policies, patterns of activities, etc.
Inter-subjective Sensemaking or social interaction level	Collective knowledge residing among individuals in social interaction (<i>or socially mediated knowledge</i>)	Collective beliefs, values and norms; collective identity; developed shared meaning system through social practice and heedful interrelating.
Intra-subjective or individual Sensemaking level	Individual knowledge – resides in individual person	Individual skills, expertise, know-how, experience, judgements, values, beliefs and assumptions.

Table 1: Cecez-Kecmanovic's (2004) Sensemaking model of knowledge in organisations (and Jerram)

Each of these four levels of Sensemaking are the sources of specific types of knowledge: individual, collective, organisational and cultural, respectively. Knowledge is continuously created and recreated within each level of Sensemaking and also through the simultaneous interplay between all levels. This Sensemaking model for knowledge in organisations is most easily seen in a simple textual model as shown in table 1 above. However, the essential interrelationships between the four levels of Sensemaking are better grasped in the more graphically depicted figure 1 below. In figure 1, the graphical illustration demonstrates that different types of knowledge at different Sensemaking levels are not isolated from each other but interact mutually, impacting on and constituting (reconstituting) each other.

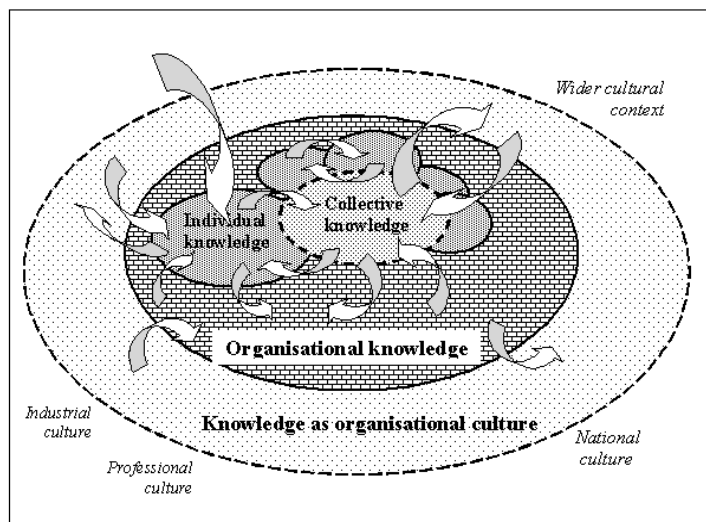


Figure 1: Cecez-Kecmanovic's Sensemaking model of knowledge in organisations (2004) (graphic depiction)

The four levels of Sensemaking and respective types of knowledge thus referred to as "the Sensemaking model of knowledge in organisations", describe different forms of social reality that are continuously created and recreated by individuals in an organisational setting.

Expanding the Sensemaking Model to the Sensemaking Framework

When considering knowledge management in the social paradigm rather than a technical or mechanistic paradigm, iterating themes arise as key issues. The first is that a social approach considers mind rather than brain

(Jerram, 2005; Blackler, 1995). Brain, intellect and abstract knowledge are an important component of knowledge, knowledge processes and knowledge management as a whole but must be understood to be only a component, not the entire process. Mind is an attitude, a propensity for a certain kind of action (heedful or heedless, for example, as described by Weick & Roberts, 2001), and deals in relationships rather than abstracts. Consequently knowledge, knowledge processes and knowledge management will be handled very differently when knowledge management initiatives in organisations are undertaken from this social and people-centric approach. Among other changes, knowledge will be seen as equally input and product. It will cease to be simply a commodity to be manipulated but will become an iterative process of meaning making or Sensemaking.

Secondly, the consequence of perceiving the key issues to be about mind and social relationships is that emphasis will be placed on communities of practice (Wenger, 1999) and the collective mind that develops within and between them through heedful interrelating (Weick & Roberts, 2001). To develop communities of practice, collective mind and heedful interrelating, trust becomes a critical factor in an era when trust has been severely eroded in the workplace. It entails organisations becoming trustworthy and being perceived by its members as trustworthy. This requires that organisations change (modern) historical perceptions and become people-centric, seeing people as valuable contributors and members of the organisation, rather than assets and liabilities with price tags attached.

We must recognize that knowledge is everywhere in the organization but we won't have access to it until, and only when, we create work that is meaningful, leaders that are trustworthy, and organizations that foster everyone's contribution and support by giving staff time to think and reflect together (Wheatley, 2004, p.63).

Developing, building and maintaining trust is essential for any KMI to succeed in any sense in a people-centric organisation. The trust needs to be built within and between groups in spheres of social interaction, and it needs to be built within the organisation at generic-subjective level, to be able to develop and engender an extra-subjective organisational culture of trust (Jerram, 2005).

A frequently overlooked component that enables (or disables) such trust, is dealing with assumptions (personal, social, organisational and cultural). Assumptions are hidden away in tacit knowledge; they are found in and condition people, groups, organisations and culture. In other words, they are a foundation upon which all Sensemaking takes place at all levels - intra subjective, inter-subjective, generic-subjective and extra-subjective - within an organisation. Knowledge management literature is starting to focus on this and is labelling it a culture issue. "Getting employees to share what they know is no longer a technology challenge - it's a corporate culture challenge" (Hibbard & Carillo, 1998, p. 49). Yet culture is only part of the story. This is a human issue, which will, in an iterative process, be found in individuals, groups and organisational culture as cultures engender trust or distrust, and as the individuals within the organisation respond, in a socially mediated manner with their trust or distrust, and as tacit assumptions are able to be identified and 'unlearned' where necessary (Jerram, 2005; Gardner, 1995).

These concepts of mind, communities of practice and trust can all be understood within a framework of Sensemaking in organisations (Jerram, 2005; Cecez-Kecmanovic 2004, 2000; Cecez-Kecmanovic & Jerram, 2001, 2002; Jerram, Cecez-Kecmanovic et al, 2003). The Sensemaking model of organisational knowledge relates closely with Tsoukas' (1996) three aspects of knowledge, as demonstrated in table 2 below.

<i>Cecez-Kecmanovic (Wiley, Weick and Ryle)</i>	<i>Tsoukas</i>
<i>Extra-subjective (Culture)</i>	Unarticulated background knowledge of commonality and assumptions
<i>Generic-subjective (Organisational Structure)</i>	Normative expectations
<i>Inter-subjective (Social Interaction &/or collective knowledge)</i>	Situational-specific context
<i>Intra-subjective (Individual)</i>	Disposition / habitus

Table 2: Combined Sensemaking model of knowledge in organisations and 3 aspects of knowledge

Cecez-Kecmanovic's Sensemaking framework has been used on a number of occasions to analyse organisational events, (Cecez-Kecmanovic, 2000; Cecez-Kecmanovic & Jerram, 2001, 2002), and application of the framework clarified a need for an expansion in the Sensemaking level labelled social interaction. The nature of knowledge at the social interaction level was labelled in the model as collective knowledge, yet true collective knowledge only comes about through heedful inter-relating, and more often than not at the social interaction knowledge is

socially mediated and altered from the individual knowledge but does not often develop to true collective knowledge. This level of socially mediated but not collective knowledge needed to be recognised within the social interaction level when categorising the nature of knowledge at the different levels of Sensemaking.

This can be seen added in parentheses in table 2 above. Also, whilst the model provides a clear and useful method for analysing events in an organisational setting, particularly examining the tensions between level [3] generic-subjective and levels [1] individual and [2] social interaction, the model did not originally provide an avenue of exploration of tensions between different groups within level [2] inter-subjective social interaction. As there are not one but several groups or communities within any organisation, that span a variety of internal and external boundaries (Wenger, 1998), there is a need to be able to further analyse the Sensemaking that occurs within the inter-subjective or social interaction level of the organisation. This was accomplished, as can be seen below in table 3, by adding the subsets [2a] intra-group social interaction and [2b] inter-group social interaction to the Sensemaking model.

	Cecez-Kecmanovic (Wiley, Weick and Ryle) & Jerram	Tsoukas (and Vladimirov)
4	Extra-subjective (Culture)	Unarticulated background knowledge of commonality and assumptions (collective domain of communally created understandings...)
3	Generic-subjective (Organisational Structure)	Normative expectations (domain specific actions) concrete settings sets of abstract rules historical community
2 2B 2A	Inter-subjective (Social Interaction) inter-group intra-group	Situational-specific context (socially mediated and situationally located interaction)
1	Intra-subjective (Individual)	Disposition / habitus (individual)

Table 3: Combined Sensemaking model of knowledge in organisations; 3 aspects of knowledge; and Tsoukas and Vladimirov's definition of knowledge (and addition of subsets to level 2)

The addition of these two subsets within level 2: inter-subjective / social interaction extends the applicability of the framework as an analytical tool for many organisational issues that take place within the social interaction level of the organisation and means that the Sensemaking framework now provides ample scope for analysis of events in organisations in all settings and levels. This is particularly important as most knowledge management initiatives narrowly focus on level 3: generic-subjective or social structure level and consequently work toward exploiting and standardising information as a primary goal of knowledge management. This overlooks the reality that it is the conflict between levels 1 and 2 people-centric Sensemaking and level 3 standardisation of Sensemaking that generates most tensions that arise in implementation and maintenance of knowledge management initiatives and information systems changes (Jerram, 2005).

Extrapolating the knowledge definition

Separate than their three aspects of knowledge (discussed above), Tsoukas and Vladimirov's (2001, p. 8) definition of knowledge as "the individual ability to draw distinctions within a collective domain of action, based on an appreciation of context or theory, or both" raises five major points that also relate closely to the Sensemaking Framework. The first key point raised is that knowledge is personal or individual, even in an organisational context. This directly relates to the first intra-subjective or individual level of Sensemaking. The second, the ability to draw distinctions, clearly delineates some of the tensions inherent between levels one and two (the highly people-centric levels) and level three (the more mechanistic, routinised generic-subjective level). In fact, it is only this heuristic ability to draw distinctions that permits individuals or groups to translate routine rules and policies into applicable realities on a context-specific case-by-case basis. The third point that knowledge is acquired socially and operates within a collective domain of communally created understandings and definitions and domain-specific actions relates equally, although in different ways, to the extra-subjective or cultural level and the inter-subjective social interaction level. It is in the inter-subjective level that the cultural will be created and / or lived out. 'Domain-specific actions' also belongs equally, and perhaps more specifically, to the third level of generic-subjective although with an entirely different character or nature than that found in cultural or social interaction. The fourth point, that knowledge is acquired in context as a socially mediated and situationally located interaction is true of the inter-subjective level of social interaction. The fifth point is that knowledge (as opposed to information) is exhibited by the ability to generalise theory from one context to another appropriately. This refers again to the general nature and process of knowledge, and echoes the ability of

individuals and groups (intra- and inter-subjective levels) to make the norms established at the generic-subjective functional on a daily application level. Both the ability to draw distinctions and make judgements and this ability to generalise theory from one context to another demonstrate a sophisticated level of skill or knowledge-in-use. This sophisticated but taken-for-granted skill separates, as few definitions do, the difference between information and knowledge, and is essentially a capacity of the human individual in both the personal and social arena.

When the key points from Tsoukas and Vladimirou's (2001, p. 8) definition of knowledge, as discussed above, are added to the Sensemaking framework and Tsoukas' three aspects of knowledge (see table 3 above), the results align closely and are seen to contain very similar concepts of knowledge in organisations.

SIGNIFICANCE OF UNDERSTANDING THE INHERENT TENSIONS BETWEEN THE SENSEMAKING LEVELS

Perhaps the most significant factor visible in the framework of table 3 is how much overlap there is between levels as well as simultaneously strong contrasts that will, necessarily, cause tensions between levels. The level that is conspicuously likely to cause and be subject to the greatest amount of tension is the organisational structure level. Individual level, social interaction level, and even cultural level all tend to be people-centric and are focused primarily on socially mediated individuality and small groups and interrelationships as they are socially negotiated. Organisational structure level tends to be in direct conflict with individuality and with socially negotiated understandings, meanings and relationships and decidedly lacks a people-centric focus. Indeed the purpose of the generic-subjective is to ameliorate the individuality that is involved in individuals and smaller groups and to create a functional environment of commonalities, rules, principles and protocols that structure common languages, work and practices toward common goals in methodical and regulated ways. This will, almost of necessity, create tensions between the rigidity and formalisation of generic-subjective against the preferred flexibility, fluidity and spontaneity of the social interaction level and individual level. Brown (2001, 28 October 2004) depicts what is labelled here as the generic-subjective as "the authorized parts which are the formal business processes" and the individual and social interaction levels as "the place where the work actually gets done". This highlights another factor of organisational life that can be a source of much of the tension between the different levels. "...organizational knowledge is inevitably heavily social in character. Because of its social origin, this sort of knowledge is not frictionless" (Brown & Duguid, 2002, p.19). It is necessary to find areas of overlap and commonality between these levels to be able to resolve some of the tensions and permit a negotiation of meanings, shared lexicon and commonality of goals and purposes.

CONCLUSION

In the present knowledge era, organisations are looking for pragmatic approaches to understanding their knowledge needs, and are finding that many such approaches concentrate on technological solutions without relating the technology to an understanding of the inherent social, organisational and people-centric needs that generate the knowledge management issues that the technological solutions are purported to answer. Sensemaking theory, as presented in this Sensemaking Framework, provides a methodology for investigating the organisational needs, tensions and conflicts that are generated as a natural consequence of the conflicting understandings and purposes of the different organisational levels, and consequently provides an analytical tool for considering which knowledge management 'solutions' (technological or other) may most reasonably match the underlying causes, issues and needs for organisational knowledge management. Similarly, systems change is an ongoing necessity in a rapidly moving technological world, and resistance to change

and systems implementation failure are common knowledge management issues that need to be resolved and handled (Cecez-Kecmanovic, 2000; Checkland & Holwell, 1998; Wilson & Howcroft, 2000; Lyytinen & Hirshheim, 1987; Orlikowski, 1992). Again, the Sensemaking Framework provides a people-centric approach that can analyse the varying levels of resistance and the social aspects of change that can lead to implementation failure, and thus provide a means to plan effectively for more socially amenable change implementation.

Both the Sensemaking model (Cecez-Kecmanovic, 2000; Weick, 1995) and Tsoukas' distributed knowledge system are people-centric and social-concept approaches to knowledge management and to information systems change. The synthesis of Sensemaking theory from Cecez-Kecmanovic's model with Tsoukas' depiction of organisation knowledge permits subtle enhancements of each approach, augmenting the capabilities of each theory to be used as an analytical tool when dealing with knowledge management needs. The use of the four specific levels of Sensemaking brings clarification to Tsoukas' approach by adding an ability to distinguish the location of the various attitudes and approaches (such as the understanding that normative expectations are located at the generic subjective level of understanding, whereas situational-specific contexts are located within the socially mediated level of understanding). Similarly, Tsoukas' insights add specificity to the distinguishing features of the Sensemaking levels in Cecez-Kecmanovic's model, and the depiction of the organisation as a distributed knowledge system reframes the conceptual approach to knowledge in organisations in such a way as to highlight the necessity for subjective and interpretive methodologies like the Sensemaking Framework to address Information Systems issues and needs.

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