

KNOWLEDGE IN ORGANISATIONS: A SENSEMAKING VIEW

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ABSTRACT

In this paper we investigate social dimension of knowledge in an organisational context. Inspired and informed by sensemaking views of organisations (Weick, 1995), our inquiry focuses on knowledge as both an input to and a product of sensemaking processes at four different levels in organisations: the intra-subjective sensemaking of an individual; the inter-subjective sensemaking in social interactions; the generic subjective (organisational) and the extra-subjective or cultural level of sensemaking (Wiley, 1988, 1994). Starting from this basic framework, we develop a Sensemaking Model of Knowledge in organisations that identifies four types of knowledge—individual, collective, organisational and cultural knowledge—created, used and maintained at respective sensemaking levels. The objective of the paper is to demonstrate how the Sensemaking Model can help us understand knowledge management phenomena and explain their impacts on organisational performance. To achieve this objective we first describe the Model and then illustrate its application and contribution by drawing from field studies of knowledge management in three different organisations.

1. INTRODUCTION

To create and provide products and services organizations utilize their various resources. Different organizations use their resources differently, with varying market success and economic and social outcomes, depending on the knowledge they draw upon. A view of organizations as knowledge systems focuses on the ways organizations draw upon their knowledge and create new knowledge so as to best utilize their resources in providing distinctive products and services (Penrose, 1959; Nonaka and Takeuchi, 1995; Spender, 1996). The most interesting insight from such a view is that there is no limit in an organization's utilization of its resources: "the more practitioners *invent* new ways of using their resources (themselves included), the more services they can potentially derive" (Tsoukas, 1996, p. 13; emphasis in the original). The key difference that makes a difference is the *knowledge* organizations draw upon and their knowledge generating capacity.

That knowledge makes a difference to performance has been realized by many organizations worldwide. In order to 'manage knowledge' better they undertake various knowledge management programs, appoint chief knowledge officers (CKO), and implement Knowledge Management Systems (KMS) (Alavi and Leidner, 2001). Managing knowledge is considered to be of critical importance for sustained competitive advantage. However, despite the abundance of literature on knowledge management in Information Systems (IS), management, organization studies, cognitive science, sociology, and other disciplines, practitioners do not find many applicable or useful concepts, frameworks and models (Earl, 2001). Interestingly enough there aren't satisfactory answers to fundamental questions: What is the nature of knowledge that organizations try so hard to manage and what does it actually mean 'to manage' knowledge?

This paper addresses these questions by drawing on sensemaking views of organizations (Weick, 1995) and the levels of sensemaking reflecting Wiley's (1988, 1994) semiotic theory of self. Knowledge is understood as both an input and a product of sensemaking. The objective of the paper is twofold: first, to propose a Sensemaking Model of Knowledge in organizations that identifies different types of knowledge at four distinct sensemaking levels: the intra-subjective level of an individual, the inter-subjective, the generic-subjective (or organizational) and the extra-subjective (or culture) level; and second, to demonstrate how the Model contributes to understanding knowledge management phenomena and explanation of knowledge management impacts on organisational performance. Examples of knowledge types, their characteristics and interrelationships (including tensions) are illustrated by drawing from field studies of knowledge management in three different organisations. These examples will demonstrate how the Sensemaking Model of Knowledge can be applied to investigate rich and dynamic processes of knowledge creation and use in organizations and complexity of its management. Based on empirical findings, the paper identifies several important problems that need to be researched if organizations are to actually manage their knowledge.

Next section briefly discusses knowledge-based approaches to organizations, followed by a presentation of the assumptions and basic concepts of a sensemaking view of knowledge. A

Sensemaking Model of Knowledge is presented in section four. The application of the Model and lessons learned from the field studies are discussed in section five. The paper concludes with suggestions for further research and theoretical expansion of the proposed Model.

2. ORGANISATIONS AS KNOWLEDGE SYSTEMS

Knowledge-based approaches to organizations seek, on one hand, to classify the different types of organizational knowledge and, on the other, to explain the nature of knowledge in organizations (Tsoukas, 1996). Several taxonomies of knowledge have been proposed out of which we'll mention only two. Spender (1996) classifies knowledge along two dimensions: a) knowledge held by an individual or by a collective; and b) knowledge articulated explicitly or manifested implicitly. As a result, according to Spender, knowledge can be i) conscious (explicit, held by the individual); ii) objectified (explicit, held by the organization); iii) automatic (preconscious, individual) or iv) collective (manifested in organization practices). Tsoukas (1996) rightly questions the rigid and artificial distinction between individual and social knowledge implied by this taxonomy.

Another, and quite influential taxonomy was proposed by Nonaka and Takeuchi (1995). They also start from a distinction between explicit and tacit knowledge, based on their interpretation of Polanyi's work (1962, 1966). They propose that translation and conversions that take place between explicit and tacit knowledge are essential for knowledge creation and use in a company. They identify four types of knowledge conversion (explicit-to-explicit, tacit-to-explicit, explicit-to-tacit and tacit-to-tacit) based on which they propose a model for knowledge creation in a company. While Nonaka and Takeuchi's theory has been widely used and cited, its assumptions regarding the nature of tacit knowledge have been called into question. Namely, Tsoukas and Vladimirov (2001) and Tsoukas (1996) criticized Nonaka and Takeuchi's adoption of Polanyi's theory (1962, 1966) and demonstrated that their interpretation of Polanyi's notion of tacit knowledge is erroneous. Tacit and explicit are not two separate types of knowledge, but are mutually constituted. Explicit knowledge is always grounded in a tacit dimension, (Polanyi, 1966). Tacit knowledge, as Tsoukas explains, "is the necessary component of *all* knowledge; it is not made up of discrete beans which can be grounded, lost or reconstituted" (1996, p. 14).

A good example of investigations aiming at explanation of the nature of knowledge in firms is one by Tsoukas (1996). He extends the view of organizations as knowledge systems (Grant, 1996) and examines a concept of a firm as *a distributed knowledge system*. Inspired by Hayek's (1945) (re)formulation of economic problem of society, Tsoukas argues that firms are inherently decentered systems and that the knowledge they need to draw upon is indeterminate and emerging, and cannot be known by a single mind. He also provides a well-grounded explanation of a distributed nature of a firm's knowledge. Tsoukas (1996) explains social practices as consisting of three dimensions: role-related normative expectations, dispositions (formed in past socializations), and interactive situations (involving local knowledge of particular circumstances, time and space). While firms may have more or less control over normative expectations, they have no control over its members' dispositions nor could they determine the use and creation of knowledge in social interactions in which members' normative expectations and individual dispositions are instantiated.

The approach adopted in this paper draws from both streams of research in that it aims to classify types of knowledge and also to contribute to the understanding of knowledge in organizations. The theoretical foundation of our work, however, is different from approaches in either of the streams: it originates from the sensemaking perspective of knowledge in organizational context.

3. A SENSEMAKING VIEW OF KNOWLEDGE IN ORGANIZATIONS

Sensemaking is an everyday activity, briefly described as "The reciprocal interaction of information seeking, meaning ascription, and action" (Thomas, Clark, and Gioia, 1993, p. 240). Whenever we encounter an event that is surprising, puzzling, troubling, or incomprehensible, we try, more or less consciously, to interpret it, to assign meaning to it, that is, to make sense of it. In the process of interpretation and explanation we typically draw from our experience and from our background knowledge of a context within which the event occurred. We also often talk to other fellow colleagues (workers, citizens, friends), share our experiences, test and co-create our assumptions and beliefs in an attempt to "structure the unknown" and assign the meaning to the surprising event. The interpretation and understanding of the event, achieved either individually or collectively, is an outcome of the sense-making process (Louis, 1980, p. 241) the importance of which is usually more appreciated if it triggers or enables an action.

Several aspects of sensemaking are relevant for exploration of knowledge in organisational contexts. First, an individual makes sense of her/his work environment, tasks and activities, and also more broadly of organisational processes and events. In this process, the individual both uses and re-creates her/his personal knowledge. Second, members of an organisation interact, informally and formally, to explore problematic situations, share their assumptions and experiences, and co-create inter-subjective meanings. In this collective sensemaking process problematic situations are named and framed, the boundaries of intervention are set, and a coherent 'structure' imposed allowing an intelligible action (Schon, 1983). Key components of this process – knowledge sharing, achieving mutual understanding, inter-subjective meaning making and knowledge co-creation, as well as taking action – are all entangled in social interaction in an undistinguishable manner. Only by engaging in and observing social interaction, can we as researchers make sense of them and learn about collective knowledge formation and use.

Third, in any organisation there are commonly accepted ways of seeing and doing things. There are organisational (work, management) roles, processes and structures, meaning of which is shared among its members without them participating in their creation. The meanings ascribed to organisational roles (normative expectations), processes and structures persist while individuals performing them may change. Sensemaking involved in creating and maintaining such generic meanings is called 'generic subjective'. This is so-called social structure level at which "concrete human beings, subjects, are no longer present. Selves are left behind at the interactive level. Social structure implies a generic self, an interchangeable part—as filler of roles and follower of rules—but not concrete, individualized selves" (Wiley, 1988, p. 258). While inter-subjective meaning making through social interaction is a source of innovation, encouraging change, generic subjectivity enforces control, securing stability. In this dialectic relationship Weick (1995) sees the essence of organisation.

Fourth, involved in all sensemaking processes described above, are customs, norms, habitual behavior, rituals, myths, metaphors and other language forms, etc., that fall under the general rubric of culture. This realm of abstract symbolic reality underpins all other sensemaking levels. Referring to Wiley (1988), Weick calls culture an ‘extra-subjective’ level of sensemaking which provides a reservoir of background knowledge allowing and constraining meanings at other levels.

Organisations can thus be viewed as a dynamic web of sensemaking processes. They are created and recreated by continuous and simultaneous interplay between all types of sensemaking: intra-subjectivity of its members, their inter-subjective and generic subjective (social structure) sensemaking, all embedded in organisational culture (that is extra-subjective sensemaking). The three levels of sensemaking above the level of individual should be understood, not in an hierarchical sense, but as different generalisations of social reality, each more distant from the individual.

4. THE SENSEMAKING MODEL OF KNOWLEDGE

By taking this four-level sensemaking view of organisations as our point of departure, we explore the nature of knowledge at each level and processes by which such knowledge is created and managed. We begin with the level of individual sensemaking, where knowledge belongs to an individual and is thus called ‘individual knowledge’. We then identify ‘inter-subjective or collective knowledge’, ‘social structure or organisational knowledge’ and ‘knowledge embedded in culture’, at the three levels of sensemaking beyond an individual. Studying the nature of sensemaking processes at each level should help us understand not only the nature of knowledge and how knowledge is created, maintained and used at these levels, but also the continuous interplay and knowledge dynamics between the levels.

Individual knowledge is acquired through personal experience and reflects past socialisations. It involves a person’s values, beliefs, assumptions, experiences, skills, expertise, etc. that enable the person to interpret and make sense of the environment, perform tasks and take actions. In other words, individual knowledge is created, maintained, used and recreated through intra-subjective sensemaking. By being involved in particular organisational processes and work practices, by interacting with other members, an individual gains new experiences, faces problems and makes sense of them, which frequently triggers revisiting and updating his/her personal knowledge. This suggests that intra-subjective sensemaking (and by implication individual knowledge) is influenced by other sensemaking processes.

Individuals who work together and complete tasks jointly (eg. as a project team or a strategic planning group) often learn to cooperate with one another, interpret situations inter-subjectively and undertake joint or coordinated actions. What makes a group of individuals act as a *collective*, capable of completing complex tasks that no single individual would be able to complete, is their *collective knowledge*. The concept of collective knowledge (derived from *collective mind* by Weick and Roberts, 1993) is essentially different from individual knowledge in that it does not reside within but between and among individuals. To understand collective knowledge we need to understand social interaction and patterns of interlocking behaviours among the individuals

that lead to joint or coordinated actions. Collective knowledge, defined as an emergent capacity to act collectively, involves continuous co-creation of inter-subjective meanings and mutual understanding through ‘heedful interrelating’ (as defined by Weick and Roberts, 1993, following Ryle, 1949). Weick and Roberts (1993, p. 362) warned that heedful performance should not be mistaken for habitual performance. “In habitual action—they explained—each performance is a replica of its predecessor, whereas in heedful performance, each action is modified by its predecessor (Ryle, 1949, p. 42).”

Social interactions and collective knowledge also create and maintain a particular ‘level of social reality’. Through inter-subjective meaning making and heedful interrelating individual selves get transformed from ‘I’ into ‘we’ (Weick, 1995). In any social setting, these processes are ongoing within groups and among groups, leading to a multiplicity of pockets of collective knowledge that are in a state of flux, with shifting focus and indeterminable boundaries.

Unlike collective knowledge, *organizational knowledge* has more visible forms, is typically subject to legitimization and is thus more easily identifiable. Organisational knowledge involves *generic* meanings and social structures shared by and transmitted to organisational members irrespective of their participation in their creation. Typically it includes notions of organisational structure, roles, policies, norms, rules and control mechanisms, social networks, scripts or patterns of activities and actions. Tsoukas and Vladimirov (2001) call it ‘organizational knowledge in a strong sense’. Generic meanings emerge through sensemaking processes involving institutional role-holders and following the norms and rules (that specify authority and legitimacy, due process etc.). At the same time generic knowledge emerges from a continuing transition from inter-subjective meanings to generic -subjective meanings (Weick, 1995, p. 71).

The fourth type of knowledge defined by the Sensemaking Model is *knowledge embedded in culture* which assumes a stock of tacit, taken-for-granted convictions, beliefs, assumptions, values and experiences that members of an organisation draw upon in order to make sense of a situation and create meanings at all other levels. As such knowledge embedded in culture serves as a reservoir from which they derive their meanings and thus determines the horizon of possible understanding among the members. Moreover, common beliefs and values are said to be the ‘glue’ that holds communities together (Blumer, 1969). As part of a symbolic reality, cultural knowledge is *extra-subjective*. People are usually not consciously aware of their cultural knowledge. Such knowledge is transmitted through language, symbols, metaphors, rituals and stories. Only when an element of this knowledge is explicated and brought into a situation can it be thematised, contested, and justified. Only then does it become criticisable knowledge that is part of an explicit stock of knowledge resulting from interpretive accomplishments of actors at other levels.

The Sensemaking Model of Knowledge in organizations that identifies the four knowledge types – individual, collective, organisational and culture knowledge – is graphically presented in Figure 1. It should be noted here that while the four types of knowledge identified by the Model reflect the different nature of knowledge and knowing in organizational context (resulting from the different nature of sensemaking) they are not, and cannot be separated. These four types of

knowledge are mutually constituting. They are intertwined in such a way that they continuously influence and recreate each other.

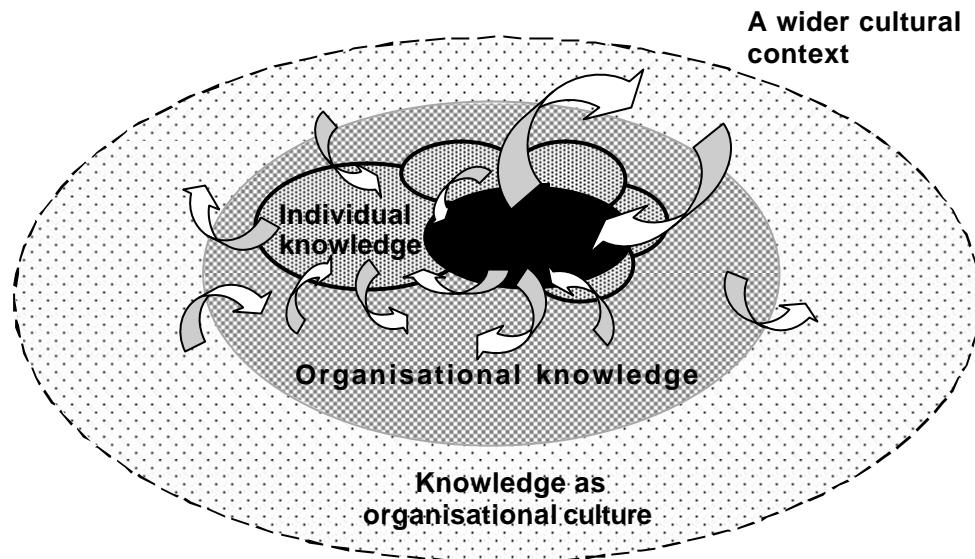


Figure 1
The sensemaking model of knowledge management in organisation

In order to understand the nature of knowledge in organisations, it is obviously important to identify and analyse different types of knowledge at each sensemaking level, but it is equally important to investigate how knowledge at one level affects the other, and tensions between the levels. In the next section we present some illustrative examples of knowledge dynamics and tensions between knowledge types.

5. LEARNING FROM EMPIRICAL STUDIES

The Sensemaking Model of Knowledge has been applied and developed further in case studies of knowledge management processes in three different organisations. The first was the field study of a University restructure process in which a large three-member Federated University (distributed on 7 campuses) transformed into a unitary University, including transformation of all academic, administrative, management and IT/IS entities, structures and processes (Cecez-Kecmanovic and Jerram, 2001, 2002; Jerram, et al., 2002). The second was the case study of an Investment Banking Company and continuous development of its core Information System (Cecez-Kecmanovic and Key, 2001, 2002). And the third is the longitudinal case study (still going on) of

a retail company Colruyt (Belgium), its decision-making practices and the use of a groupware system. The Sensemaking Model of Knowledge informed and guided empirical research and interpretation of findings. Learning from these studies in turn resulted in further theoretical developments of the Model. In this section we briefly summarise major findings and theoretical propositions resulting from these studies.

It is found, for instance, that depending on the degree of uncertainty within which an organisation operate some sensemaking levels (and respective types of knowledge) become more active and essential for an organization's well-being, than others. In times of stability and low uncertainty, organizational knowledge is stable and usually unchallenged by ongoing inter-subjectively created meanings. Social interaction typically follows the habitual patterns defined by social structure in accordance with values, norms, standard patterns and scripts. However, in times of change (such as University restructure we observed), the established values, norms and scripts are disturbed, social structures and generic meanings, that is organisational knowledge, loose their validity and currency, which increase uncertainty, incite disintegration, and endanger collective identity. There is an urgent need to create new generic meanings, new synthesis, and legitimate new social structures and organizational knowledge. This is a knowledge management problem par excellence, albeit not recognized as such in practice. How to built new organisational knowledge and minimize the risk of instability and loss of identity is an essential question for any organisation undertaking major changes.

In the case of University restructure, the values, norms and experiences sedimented through history of each member-University were no longer acceptable. In other words, each member-University was pressured to change its culture. Furthermore, their academic structures, educational programs, policies and procedures – that is organisational knowledge – had to be abandoned. Instead, new academic structures, educational programs, policies and procedures, unique for the whole united University – that is new organisational knowledge – had to be created. The University Executive perceived that member-Universities resisted change and that the restructure was a risky venture. To prevent chaos and assure the least disruptive transition from the old to the new University, the Executive designed a one-year restructure process driven by their guidelines and policy documents.

Based on the guidelines, for example, academics were invited to create new schools in a bottom-up process. From the knowledge management point of view this meant that the Executive re-defined and legitimize organisational knowledge, expecting academic staff to implement it in their specific circumstances. Circumstances, however, were very different across the University. For instance, academics from various psychology units in the old University structure did not have problems in proposing the new School of psychology. Their discipline was well defined and the expected number staff in the proposed School was within the prescribed range, so they easily fit the guidelines' criteria. Academics in some other fields though did not sail that easy. Some academic groups experienced huge problems and were not able to agree on a school proposal that would satisfy the guidelines' rules. Requests by some academic groups to change the criteria for school formation in the guidelines, were rejected by the Executive. These instances illustrate how the Executive took control of new organisational knowledge creation and legitimation organisational. As a result there was tension between new organisational knowledge (eg.

guidelines) and inter-subjectively created knowledge by academic groups (related to school proposals). Furthermore, there was also tension between different groups of academics with different views, committed to competing proposals. After the decisions were finally made by the Executive, these academics felt disappointed, dissatisfied and demoralized. The negative effects of such a transition process were felt afterwards in everyday functioning of these schools.

Another interesting insight came from the analysis of the use of email to communicate ideas, suggestions and concerns by staff (academics and general) to the President of the University during the restructuring process. The idea was that an open communication channel between all interested staff and the President would democratise the restructure process and help staff contribute to the decision-making. While this was technically feasible, and many academics and administrative staff took it seriously, including the President, such use of email failed to achieve the objectives. The President was flooded with emails and made an honest effort to read them all and responded to as many as possible. Interviews with staff who sent these emails showed that they considered this whole exercise ‘futile’ and ‘misleading’. They felt their emails ‘went into a big hole’ without making any impact. The President, on the other hand, was convinced that many good ideas and proposals were taken into account. Looking through the lens of the Sensemaking Model, we see that individuals assumed that by sending emails to the President, their views and proposals, that is their individual knowledge, would affect organisational knowledge formation. Similarly, the President assumed that in such a way ideas and proposals by staff (in several thousand emails) would be taken into account and thus would democratise the restructure process.

The lessons learned from this case study contributed to further theoretical development of the Sensemaking Model of Knowledge Management in organisations. The nature of organisational knowledge is such that it needs to be widely shared by all members of an organisation. Only then will it help individuals and groups to coordinate their actions and contribute to an organisation’s capacity to act. Successful re-creation or transformation of organizational knowledge cannot be achieved by concentrating all meaning making at the social structure level irrespective of ‘quantity’ of the individual members’ input. Knowledge in an organization is inherently distributed and discursive. No matter how well intentioned, concentration of knowledge creation and maintenance at the social structure level to bear on all local circumstances is unsustainable and doomed to failure. The lessons from this study confirmed that “the key to achieving coordinated action does not so much depend on those ‘higher up’ collecting more and more knowledge, as on those ‘lower down’ finding more and more ways of getting connected and interrelating the knowledge each one has” (Tsoukas, 1996, p. 22).

Organisational knowledge generally tends to persist and resist change, thus ensuring organisation stability. Inter-subjectively created collective knowledge is just the opposite: it is a permanent source of creativity and innovation that emerges from social interaction. Even in relatively stable environments, inter-subjectively created knowledge tends to challenge generic, organisational knowledge thus undermining social structure stability. There is, as Weick (1995) pointed out, an inherent tension between inter-subjectively created, collective knowledge, on one hand, and the generic, organisational knowledge, on the other, which is the essence of organising. Managing

this tension is one of the key knowledge management issues in organisations. How is the tension between inter-subjective knowledge and organisational knowledge managed in other studies?

In the Colruyt Company decision-making is distributed and employees initiate and participate in problem resolution. The philosophy of the Colruyt Company is continuous innovation and development, which naturally puts emphasis on bottom-up initiatives and innovation (that is inter-subjectivity). Creation of collective, intra-subjective knowledge through social interaction (face-to-face and via their in-house developed groupware system) is encouraged. Company is managed less by control and more by providing social framework, motivation and incentives for individual and group contribution and Company-wide cooperation. Inter-subjective knowledge sometimes openly challenges established organisational knowledge (eg. a discount policy, norms regarding customer services, confidentiality rules), which is resolved by public debate via groupware or a task force with self-nominated membership. The Company culture implies that the force of the better argument should determine the outcome.

Here we see that the tensions between collective knowledge (which emerges from social interaction) and organisational knowledge do arise and that the Company has well-established norms and processes to deal with them. An interesting lesson to be learned from the Colruyt Company is how to harmonise inherent tensions between organisational knowledge and collective knowledge created by many groups. While the Colruyt Company encourages knowledge co-creation and sharing through social interaction, it also carefully maintains its organisational knowledge, however in a harmonising way. This is achieved by nurturing Company culture that values cooperation, collaboration, and solidarity, as well as workers initiative, responsibility and participation in decision-making. Company culture is nurtured and gradually changed through Company-provided seminars and workshops attended by all members as part of their job.

In the Investment Banking case the major issue was how to improve services to clients and maintain competitive advantage. Analysts' knowledge was considered a key Company resource that determined the quality of services and ultimately its competitive advantage. By developing an Information System (IS) that captured analysts' spreadsheet models (representing their knowledge about target companies) in the Company database and thereby providing much bigger range of financial reports of high quality to clients, the Company achieved its objectives. After initial resistance, analysts learned to use the IS and to appreciate its value for their job. The Company attracted a significant number of new large clients who used the IS directly. The philosophy of the IS team was continual development and co-evolution with the Company (Cecez-Kecmanovic and Key, 2001, 2002).

The analysis of knowledge management issues behind the successful development and use of the IS revealed successful relationships between the IS team and analysts as well as between the IS team and clients. The IS team gradually developed mutual understanding with analysts which enabled productive social interaction, knowledge sharing and co-creation. Having such experience, the IS team knew how to approach external clients and establish mutual understanding and trust with them as well. Lessons learned from this case study pertain to inter-group relationships, collective knowledge creation and coordination of actions. Knowledge

sharing and co-creation emerged through recurrent interactions between members of these groups driven by collectively shared aims to excel in their individual jobs and, in case of the IS team, in their group task—IS development. The history of joint accomplishments enhanced heedful interrelating between IS team members and analysts and later on between IS team members and clients. This in turn improved further their interrelationships and mutual trust. As a result individuals felt that they improved their individual knowledge and they were more efficient and effective in completing their complex tasks. What we observed in addition was that they also developed their collective knowledge (that Weick and Roberts call *collective mind*, 1993) demonstrated in patterns of heedful interrelations and coordination of actions. While it is widely believed that the culture in investment banking is highly individualistic, and that company performance essentially depends on analysts expertise, we found that company performance can be enhanced further through collective knowledge which is thoroughly social. These findings confirm Weick and Robert's (1993) proposition that notion of collective mind, “conceptualised as a pattern of heedful interrelations of actions in a social system” (p. 357), can explain organisational performance and their capacity (or lack of it) to act in complex and turbulent environments.

6. CONCLUSION

This paper addressed the question of the nature of knowledge in organizations and what managing knowledge actually entails. The Sensemaking Model of Knowledge is proposed to contribute to the understanding of different types of knowledge – individual, collective, organisational, and cultural – that are in permanent flux, influencing and re-constituting each other. The Sensemaking Model of Knowledge is consistent with and contributes to the view of the firm as a *distributed* knowledge system “which is not, and cannot be, known in its totality by a single mind” (Tsoukas, 1996, p. 22; Hayek, 1945, 1982). Namely, the model describes several ways and levels of knowledge distribution in an organisation: from individual knowledge of organisational members, to collective knowledge of groups, to organisational knowledge and knowledge embedded in culture. Through the emergence within and dynamic interchange between these types of knowledge, knowledge in an organisation is continually re-constituted. The Sensemaking Model of Knowledge provides a framework to investigate these simultaneous knowledge creation processes and explain their dynamics.

Three field studies, briefly discussed here, illustrate the explanatory power of the Sensemaking Model and demonstrate its applicability and usefulness in the analysis of complex knowledge management phenomena in practice. In the course of empirical studies several new questions emerged that require further research.

Firstly, further explorations are required to explain how individuals relate to each other, engage in inter-subjective meaning making (thereby participating in an emerging collective knowledge) and coordinate their actions (Weick and Roberts, 1993; Tsoukas, 1996). Secondly, how individual knowledge and collective (inter-subjective) knowledge are fundamentally predicated on collectively shared meanings, that is cultural knowledge, and furthermore, how individuals and groups, in turn, through their sensemaking influence cultural knowledge, are among critical questions in the practice of knowledge management. Exploration of these questions would

benefit from theoretical concepts such as an individual's *habitus* by Bourdieu (1990) and individual dispositions by Tsoukas (1996), as well as concepts of explicit, focal, subsidiary and tacit knowledge by Polanyi (1962, 1966).

Thirdly, social interaction level of sensemaking is not only about groups and their collective meaning making and action. There are also multiple, ongoing social interaction processes among the groups that may play an important role in both collective and organizational knowledge (as evidenced in one of our studies). The role of group history, group identity and local culture in inter-group relations and knowledge sharing and co-creation should be further investigated.

Fourthly, as findings from the field studies indicate, there is an inherent tension between the structure level (organizational knowledge), on one hand, and social interaction and individual levels, on the other. How can an organization (re)create and maintain its (organizational) knowledge so as to assure stability and consistency of its operations, and at the same time foster creativity, innovation, individual and group responsibility and commitment? How can normative expectations associated with *collective agents* (Wiley, 1988) with corporate responsibility (including maintenance of organizational knowledge) be reconciled with normative expectations associated with other agents responsible for the parts and involved in inter-subjective knowledge creation in specific, local situations? These are among key knowledge management issues for any organization that demand further investigations and theoretical devebpmnts.

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