

A SENSEMAKING MODEL OF KNOWLEDGE MANAGEMENT IN ORGANISATIONS

Dubravka Cecez-Kecmanovic

School of Information Systems, Technology and Management
Faculty of Commerce and Economics UNSW, Sydney NSW 2052, Australia
Tel (612) 9385 4735, Fax (612) 9955 5492, dubravka@uws.edu.au

Cate Jerram

IS-KOMO Research Group, School of Management, College of Law and Business
UWS, Blacktown Campus, Locked Bag 1797, Penrith South DC NSW 1797, Australia
Tel (612) 9852 4167, Fax (612) 9852 4185, c.jerram@uws.edu.au

ABSTRACT

The paper investigates the phenomenon of knowledge management in an organisational context with the aim to improve understanding of its inherent nature and characteristics. The research is based on the assumption that better understanding of knowledge management and the actual needs of actors and organisations are required to design meaningful Information Technology (IT)-based systems to assist them. By drawing from a case study of a university restructure process, where change highlighted many, normally invisible, knowledge management issues, the paper introduces a sensemaking model of knowledge management and demonstrates how it may contribute to our understanding of knowledge in organisations. The paper also tests the model as a conceptual tool to identify distinctive features of knowledge at different levels (individual, interpersonal, organisational and cultural) and related knowledge creation and sharing processes, which provide a basis for investigating required IT support.

1. INTRODUCTION

How to manage knowledge, knowledge work and knowledge workers, so as to achieve competitive advantage have become acutely critical questions for all organisations, not only for so called knowledge-intensive firms. Companies are investing in various knowledge management initiatives with urgency, yet with dubious results (Storey and Barnett, 2000; Schultze and Boland, 2000). It is not surprising that issues in knowledge management have caught the attention of researchers and proliferated in so many fields, including organisational studies, management, and information systems (IS) (see eg. Choo, 1998; Alavi and Leidner, 2001), though often lacking mutual recognition. In IS a particular attention is focused on Knowledge Management Systems (KMS) that apply Information Technologies (IT) to enable, assist and support knowledge management processes in organisations. This research has been criticised for emphasising the technology at the expense of people (Swan et al., 1999). Especially the assumptions about knowledge in organisations and the (desirable and expected) role of IT in its creation, transfer and deployment, have been criticised as superficial and naïve and lacking theoretical foundation (Galliers and Newell, 2001; Carlsson, 2001).

The assumption behind the approach in this paper is that knowledge is inherently a human and social phenomenon which requires much deeper understanding if we are to make any good with IT-based KMS. Furthermore, we argue that the real challenges for the IS researchers are to address and improve understanding of a) the nature of knowledge in organizational contexts, b) the needs of social actors in

various knowledge management processes, and c) how they can be assisted to be more successful in knowing, which will form the basis to investigate d) the requirements for IT-based systems to support and assist actors and organisations in knowing and acting.

By addressing the first two issues, this paper aims to introduce a *sensemaking model of knowledge management* and to demonstrate how it can be applied in empirical studies to assist in understanding knowledge management phenomena in organisations. Within this scope, the paper further indicates how the proposed model could be used as a conceptual foundation for exploring requirements for IT-based KMS.

While exploration of sensemaking processes in organisations has a long history no theory of organization exists that is explicitly founded on the sensemaking paradigm. Nevertheless, “there are ways to talk about organization that allow for sensemaking to be a central activity in the construction of both the organization and the environment it confronts.” (Weick, 1995, p. 69). By drawing from a wide range of sensemaking theoretical foundations and more specifically from Wiley’s theory of *semiotic self* (1988, 1994), in the following section we introduce a four-level sensemaking model of knowledge management in organisations. A brief description of the research setting and methodology is provided in section 3, followed by the presentation of the case study data in section 4. Empirical data from the case study are interpreted and analysed within the sensemaking model of knowledge management in section 5. Conclusions and future research are presented in the last section.

2. A SENSEMAKING MODEL OF KNOWLEDGE MANAGEMENT

The interest in sensemaking in organisations has increased as conceptions of organization shifted from rational systems toward open systems. This shift meant recognition of organisation’s openness to and communication with the environment, viewing organisation as a looser rather than tighter coupling among its elements, and emphasising process rather than structure (Scott, 1987). Smircich and Stubbart (1985), for instance, define organisation as “a set of people who share many beliefs, values, and assumptions that encourage them to make mutually-reinforcing interpretations” of situations, their own acts and the acts of others, and made them act in mutually-relevant ways (p. 727). As interest in ‘what is out there’, ‘what is in here’ and ‘who must we be in order to deal with these questions’ increased, sensemaking in organisations became of central concern (Weick, 1995, p. 70).

According to a particular sensemaking view of organisations, inspired by Wiley (1988, 1994), organizations are understood as continuous interplay between interacting subjects, their inter-subjectivity and their collective “we” and generic subjectivity, within the constraints of organisational culture. More precisely, organisations are described by four, mutually-interrelated levels of sensemaking: 1) the level of an individual who has thoughts, beliefs, feelings, desires, intentions, etc., that is called an *intra-subjective* level; 2) the level of social interaction at which actors create *inter-subjective* meanings; 3) the level of social structure where social reality characterized by *generic subjectivity* is formed and maintained, and 4) the level of organisation culture or an *extra-subjective level* (Wiley, 1988). 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.

By taking this four-level sensemaking theory of organisations as our point of departure, we posit that the distinction of different levels of sensemaking is of essential importance for understanding the nature of knowledge in organisations and the key processes of knowledge creation, transmission and deployment. Arguments for this are the following. Firstly, at each level, sensemaking is carried out by different entity, by *self* at the intra-subjective level of an individual and by different *upward reductions of self* (to use Wiley’s words) at other levels. Consequently, the nature of knowledge is significantly different at each level. Secondly, knowledge at different levels represents and is constitutive of different types of social reality that make up an organisation, hence, different nature of knowledge management processes. Thirdly, whatever the kind or size of an organisation and the situation it finds

itself in, the sensemaking processes operate at all four levels, though not necessarily in the same way and with same importance and intensity. Understanding the generic nature of sensemaking processes at each level should help us understand not only the nature of knowledge management processes at these levels, but also the continuous knowledge dynamics within and between the levels.

In brief, the sensemaking model of knowledge management in organizations proposed here identifies the following knowledge types and associated knowledge management processes:

- **Individual knowledge** involves a person's values, beliefs, assumptions, experiences, skills, etc. that enable the individual to interpret and make sense of the environment, his/her own actions and the actions by others. In other words, individual knowledge is created, maintained and used by intra-subjective sensemaking. By being involved in particular organisational processes and work practices, an individual gains new experiences, faces new problems, and make sense of them, thus revisiting or updating his/her personal knowledge. Furthermore, it is an individual who acquires knowledge, has memory and learns, who makes sense of the world, interacts with others and acts, and therefore makes other ('supra-individual') levels possible.
- **Inter-subjective or collective knowledge** represents shared understanding that emerges through social interaction. Namely, individuals engaged in communication and oriented toward mutual understanding interpret events and situations inter-subjectively and create synthesised meanings that transcend individual knowledge. Inter-subjective knowing or collective mind is not within but between and among individuals (Ryle, 1949) Inter-subjective knowledge is possible due to a collective sensemaking process in which participants interrelate 'heedfully' and individual selves get transformed from 'I' into 'we' (Weick and Roberts, 1993). In any social setting, this process is ongoing, does not have a beginning and end, but may be more or less intensive and focused on specific issues.
- **Organizational knowledge** denotes generic meanings and social structures that emerge in and reproduce an organisation. Organisational members share in organisational knowledge irrespective of their participation in their creation. Typically such knowledge includes notions of organisational structure, resources, roles, policies, norms, rules and control mechanisms, patterns of activities or actions, and scripts or standard plots (Barley, 1986). It also includes 'structuring property' that reproduces social systems as explained by Giddens' structuration theory (1984). Social structures (and hence organisational knowledge) determine conditions for organisational activities and, in Bhaskar's words 'impinge upon agency' (1989). By applying organisational knowledge in their everyday action, agents in turn reproduce and potentially transform that knowledge. The interplay between agency and structure is reflected in the relationship (and tension) between knowledge co-created in social interaction and organisational knowledge.
- **Knowledge embedded in culture** assumes a stock of tacit, taken-for-granted convictions, beliefs, assumptions, values and experiences that members of an organization 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. However, as part of a symbolic reality, culture knowledge is extra-subjective. People are usually unaware of their culture 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 it can be thematised, contested, and justified. Only then it becomes criticisable knowledge that is part of an explicit stock of knowledge resulting from interpretive accomplishments of actors at other levels.

The identified types of knowledge, corresponding to specific sensemaking levels, are graphically illustrated in Fig 1. In order to understand the nature of knowledge in organisations, it is important to distinguish and analyse different types of knowledge at particular sensemaking levels, but it is equally important to investigate the impacts of one level on the other and tensions between them. For instance, the ways actors interact are determined by patterns of communication and organisational rules as part of social structure (organisational knowledge). On the other hand, actors in interaction continuously

re-create and innovate inter-subjective meanings that may call into question knowledge from social structure (including those patterns and rules). (The influences between different knowledge types are indicated by arrows in Fig 1.) While organisational knowledge tends to endure and resist change, thus enabling stability, inter-subjective knowledge is just the opposite. As a permanent source of creativity and innovation that emerges from social interaction, inter-subjectively created knowledge tends to challenge generic meanings (organisational knowledge) thus undermining social structure stability. The inherent tension between inter-subjectivity and the generic-subjectivity knowledge is one of the key defining processes of an organisation (Weick, 1995).

An interesting feature that is relevant for our case study, is that depending on the degree of uncertainty some sensemaking levels become more active and essential for an organisation's wellbeing, then others. In times of stability and low uncertainty, for instance, organizational knowledge is comfortably reigning, taken as given, 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 (internal or external or both), the established values system, norms and scripts are disturbed, social structure loses its validity and currency, resulting in increasing uncertainty. The focus in organizations usually shifts to social interaction and inter-subjective meaning making in order to create new synthesis and legitimise new social structures and organizational knowledge. These processes however may be contentious when actors in power positions exercise undue influence on meaning making and control over organisational knowledge creation.

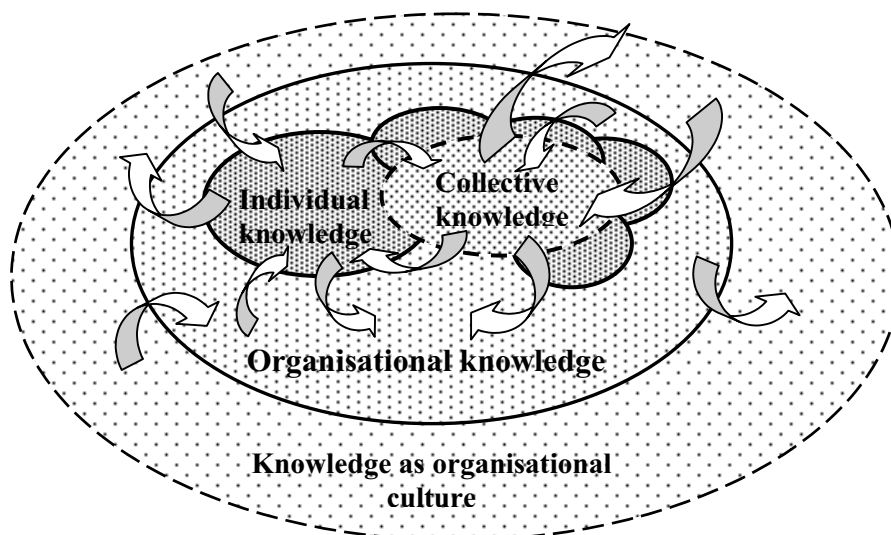


Figure 1. The sensemaking model of knowledge management in organisation

3. THE RESEARCH SETTING AND METHODOLOGY

The sensemaking model of knowledge management, presented above, is a descriptive model intended to inform and guide empirical studies of knowledge management. Through application, this model is in turn tested, refined and enriched. As part of this long-term process, this paper presents results from a longitudinal field study of knowledge management during the change processes in an academic restructure of the University UEA (a pseudonym, like all other names). The restructure entailed merging three federated University members scattered over diverse suburbs of a large city into one large and – ideally – cohesive university. Each of the three independent members had a unique culture and historical background; for instance Uni-H was an Agricultural College, and Uni-N was a Teacher's College. Specific regional identities tied each closely with its own locale, in widely disparate regions of the city, although each member had at least two campuses thirty kilometres or

more apart. All three members had independently undergone at least one restructure in recent years, with varying degrees of success. Each member-University had an academic culture tied not only to historical academic roots and traditions, but also to the development of their independent histories around sometimes charismatic and forceful academic leadership. There was an extended history of animosity between different members, with some fierce rivalry in research and teaching in many of the Faculties with overlapping disciplines. The process to unify these three very disparate members into a single entity located on eight different campuses was therefore an immense and risky task.

Particularly interesting was formation of schools in the newly created College of Business. It has been officially declared an open, democratic, bottom-up process guided by a set of rules (specified in "School formation paper"-- an official UEA document) and its outcome subject to final executive approval. As members of a former Uni-H academic unit, we participated in this process from its very beginning in the late 1999 and throughout 2000-2001. We got involved in public forums, school meetings, formal and informal discussions, and various e-mail and intranet assisted exchanges. As true insiders we shared values, beliefs and experiences as well as the feelings of collective identities with the Uni-H members but not with others. As participants we gradually developed our own views and perceptions of the process but as researchers we aimed to be much more attentive to other views, especially held by participants from other parts of UEA and those we did not interact directly. We therefore conducted a series of interviews with key actors. Nineteen in-depth interviews, varying in length from one to three hours, have been conducted (to date) with academics (11), UEA executive managers (2), school/college heads (2), and administrative staff (4) involved in the academic restructure. In these interviews, questions regarding their role and engagement in the school formation process, their understanding of the process (and its problems) and of other actors (their intentions and actions) have provided details of their individual knowledge, their contribution to and participation in inter-subjectively meaning making and shared knowledge co-creation, their view of and contribution to knowledge perceived as 'organisational knowledge' and to some extent, knowledge embedded in the university culture. The interviews were recorded and transcribed.

Field notes, documents (hard copy and electronic), e-mails, meeting records and interview transcripts were analysed and interpreted in order to gain better and in-depth understanding of the nature of knowledge and the ways it has been created, transformed and recreated; shared (or failed sharing) and applied (or failed applying) throughout the school formation process. The empirical data (including our personal experiences), we must admit, made much more sense when interpreted within the sensemaking model of knowledge management. Identifying the level of sensemaking and related types of knowledge and knowledge creation processes, helped us interpret a particular situation and understand how location (geographic), membership (Uni-H or M or N), position and role impacted upon individuals' perceptions, views, motives and actions.

Our underlying philosophical position that reality is socially constructed, has implications not only on the subject matter of our research but also on our studying knowledge in organisations. This extends to all our activities, including the research reported in this paper which can be classified as an interpretivist field study (Walsham, 1993,1995) within the broad tradition of the 'internal realism' (Archer, 1988). Given the assumption that actors' interpretations are shaped by inter-subjectively shared meanings and experiences within particular contexts, we believe that our close 'engagement' with actors in the field is essential to share in local meanings and to gain insight into their interpretations (Nandhakumar and Jones, 1997). As participants, we were able to observe the unfolding of school formation processes and explore first hand underlying knowledge management issues, which we briefly report in the following section.

4. THE CASE STUDY: CREATION OF NEW SCHOOLS

The restructure of UEA began in 1999. In the second semester, the first shape of the future four-Colleges structure was proposed, requiring a completely new structure of Schools within these

Colleges. In this paper we present a particular School of Management formation process that took place throughout 2000 to be completed at the beginning of 2001 in the College of Business.

The School proposal process was presented as “democratic and bottom-up” by the Office of the Vice Chancellor (OVC).

“An integral part of the College and Schools facilitation process is about opening up opportunities for academic staff to work through the range of options and possibilities...” (Vice Chancellor email June 2000).

“So for a large part those ones [certain other schools formation] worked because it was interactive and it was certainly bottom up...” (OVC executive, 9 March 2001).

All the academics that participated in the school formation process whom we interviewed, including those positioned at a very senior level for the restructure, all disagreed with that perception.

“Also at the moment there’s such a vacuum of knowledge as to what’s happening. As far as I can see all the decisions are being made at the top” (*Senior academic*).

“I don’t think it’s bottom up myself... actually the perception around the place is that decisions are being made at the UMC sort of level” (*Senior academic*).

How can two such contradictory views exist about the same event, processes and people? We present the history of events in the School of Management formation process, then will examine them in the following section.

At the end of 1999 there was an initiative by a group from Uni-M, inviting members from many smaller disciplinary groups to discuss one large School encompassing all disciplines within the Management field of study. February/March saw the publication of the official guidelines for the school formation process in which it was stated that a school should be in a coherent field or discipline area, with a minimum of 20 and a maximum of 50 academics. Despite these restrictions, in May 2000 a single School Of Management (SOM) proposal was submitted by Uni-M (following the initial December 1999 meeting). This proposal assumed between 70 and 80 academics, all belonging to disciplinary groups too small to be considered for a School, but loosely affiliated in the field of Management.

A new idea for a separate school of Organisation Studies & Information Systems (OS/IS) began to circulate amongst a number of staff in March 2000 and developed into a proposal in July. The proponents of the OS/IS School, who were predominantly based in Uni-H, neglected to consult with the Uni-M-based proponents of the single SOM, so the formal announcement of the second proposal was unexpected by the majority of the Management academics, and not well received. These two groups were unable to come to agreement about either a single SOM or two schools including an SOM and an OS/IS School, and so were required to attend an officially facilitated meeting.

Independently, a group in Uni-N were also developing a proposal for a single School of Work Relations and Organisational Studies (WROS), separate from the School of Management. This proposal, too, came as an unexpected shock to the original proponents of the SOM, who had thought that all academics from all previous Faculties of Management or Business were in agreement with the single large School of Management. The Uni-N-based group, proposing the third option of a School of WR/OS, were also required to attend the facilitated meeting which involved the Dean of the College and appointed Restructure Facilitators. After considerable discussion, the instructions at the meeting were to combine the OS/IS proposal with the WR/OS proposal as a way to potentially overcome the impasse. Consequently, a joint WR/OS/IS proposal was submitted to the Facilitators.

In September 2000, a second facilitated meeting was held to discuss the 2 alternative proposals. Despite the combined strength of the WR/OS/IS School proposal, there was a strong push from the Uni-M group for a single school. Finally a tentative agreement was achieved from the members of the dissenting disciplines, that they would agree to a single SOM provided that the SOM would have a substructure of discipline groups. A list of potential discipline groups that could function within such an SOM was distributed at the meeting. At this stage everyone immediately involved, including the

Facilitators, the Dean and the academics from Management or Business faculties all thought that a unified resolution had been achieved with which everyone could be moderately happy.

A third facilitated meeting was called in late October 2000 at which the Dean informed those gathered that no substructure would be allowed, thus removing the agreement and returning the situation to the earlier position of two conflicting proposals. That meeting concluded with the two groups disagreeing and each sticking to their own proposal. In November 2000, the conflict was resolved by a final decision imposed by the Restructure Committee. There was to be a single SOM with 70+ members, with no official substructure. This new structure was implemented on 1 January 2001.

The process was, in the first place, a controversial one. Many individuals involved had different, and often conflicting views. Second, it didn't progress towards establishing understanding amongst the participants, and the decision had to be pre-empted by the executive, so the democratic opportunity was lost. Why did the design for the school formation process, which was meant to enable bottom-up democratic formation, fail? What prevented the realization of the process? Despite the historic member conflicts, throughout the school formation process, no conflicts or animosities had been shown amongst the academics. As one interviewee stated, "... we did not have any known animosities – we didn't dislike people from Uni M – we liked them... it's an issue of different disciplinary views and visions as well as of practicality... It wasn't motivated by negative feelings, like we didn't want to be with them or we didn't like them, it was more that we developed an understanding between ourselves that we considered beneficial" (*Academic, Uni-H*).

There was no personal conflict or inherited animosities, there was a real willingness on the parts of all towards a fair-minded and democratically decided decision – so why no agreement? We explore these questions by focusing on the sensemaking side of that process, in particular looking at different knowledge types and knowledge creation processes at each level of sensemaking within the model proposed.

5. INTERPRETATION AND ANALYSIS

The school formation process can be seen and analysed from different sensemaking levels: from an individual to a culture (including tensions between the levels). At a particular level of sensemaking we identify a specific view of knowledge existing or emerging in the process, which gives only one side of the school formation story. The whole story can be revealed only if all the views (from all sensemaking levels) are brought together and made sense of, however complex or fuzzy they may be. Moreover, understanding the whole story of the school formation process helps in turn to improve our understanding of specific knowledge and issues in its creation at a particular level. And this interpretation cycle goes on, not always consciously, as long as we ask new questions and seek further explanation or – in Gadamer's (1976) words – until we reach 'the harmony' of specific level views and an understanding of the whole. As we oscillated between a sensemaking level analysis (within an elliptic form in fig 1), inter-level analysis (impacts indicated by arrows in fig 1) and the whole of the knowledge structure analysis (the model in fig 1) – it occurred to us in the middle of the interpretation process – that this process is, in fact, a hermeneutic circle (Klein and Myers, 1999).

In this paper we cannot present the whole interpretation process. Given the objectives of our paper, in this section we shall present the part of that process that focused on collective knowledge creation in the school formation process at the inter-subjective level and its interaction with organisational knowledge at the generic (social structure) level. We reflect on an individual and cultural level only when necessary.

Studying the emergence of the initially three, but finally two proposals for SOM and the school WR/OS/IS, we identified different historical and cultural backgrounds. The Uni-M management group had a tradition in well designed but traditional management curricula. Due to large student numbers and high demand they enjoyed a powerful position in Uni-M. By proposing one large management school, they just extended their own model that had worked so well in the past. On the other hand, the

Uni-H management group, smaller and consisting of OS and IS academics, while initially sympathetic to the one-school proposal, came up with a different proposal for an OS/IS school. While there was awareness that the whole idea of an integrated UEA meant inter-connecting academics from the same or similar fields into logical schools (arguments had to be clearly spelled out), Uni-H academics created a distinct and innovative proposal for a school that would attempt a new approach to education in the domain of organisations and IS. This happened almost spontaneously, initially through social interaction in the common room and at coffee breaks. Later on, a senior academic, formerly the dean, took a leading role and organised meetings. At the same time the also smaller Uni-N group in WR created completely independently a school proposal that reflected their strong identity and cohesion. This group had a cohesive identity in research and professional orientation, and quite independently were developing their unique proposal, without seeing any substantive links with others.

These three groups were located in campuses up to 80 km apart and rarely met, either formally or informally. The level of mutual agreement among the members of these groups was very high internally. At subsequent inter-group meetings, it was obvious that individuals identified strongly with their group's proposal, ideas and vision. One can only speculate what would have happened had the groups been co-located. As one academic commented, "Affiliation with a particular proposal developed on disciplinary and geographic bases in most cases. If you imagine a different scenario in which we were all in one building, I don't think that they would have developed as they did" (*academic, Uni-H*).

We can recognise here parallel processes of collective knowledge formation in each group, partially expressed in their school proposals. In each case, the ideas, visions, meanings, and collective actions are co-created within a group through social interaction. The whole process was embedded in their local culture. The specific conditions in which these groups found themselves (dislocated and without much contact) and their specific history, determined the uniqueness of their individual groups' collective knowledge. These unique positions conflicted and required resolution. The purpose of the inter-group meetings was to find an agreed solution for the school or schools in the management domain. The role of facilitators was to assist these groups to achieve the purpose. It's worth mentioning that everyone agreed with that purpose and had expectations and intentions to develop mutual understanding and to collaborate towards re-building a new collective knowledge. One academic who participated in many meetings commented, "And one view would come up from one area because of the membership and the people, who were in that group, and another view would be coming up from another area and it was never clear exactly where those views were going to be resolved. But as individuals I think people were trying their best, saying 'well this is happening, let's make it work for the better' " (*senior academic, Uni-M*).

Why then were they not able to achieve a mutually agreed upon and desired purpose? First, when these groups got together to discuss school proposals, inherent cognitive conflict was already built into the process by each groups' strong identification with their own unique collective knowledge. Second, despite their orientation to mutual understanding, in their interaction they could not refer to a common background knowledge (knowledge built into the culture) or common meanings. They did succeed in improving understanding and appreciating each others' proposals and reasons behind it better, although not well, and not to a degree to be able to create a single, common proposal. Third, their social interaction was officially requested and governed by the University rules (organisational knowledge). The problem however, was that the school formation document itself was a document-in-progress, changed as the Restructure Committee's understanding and vision of the process changed, and thus provided no stable environment for convergence towards a new mutually agreed school proposal. At the same time as this instability in guidelines from the Restructure Committee that was enforcing the process, there was also a rigidity that allowed no room for adapting to specific needs. When the agreement was reached that one large SOM would be feasible provided a substructure was allowed, that conflicted with the original School formation rules, and the request was denied. This demonstrates that the organisational knowledge creation was not open to input from the social

interaction levels, and that had the impact on the social interaction level that ultimately prevented an effective negotiation and compromise that would permit an agreement.

The school formation process required not only intra-group and inter-group social interaction, but mutual knowledge sharing between the social structure level and the social interaction level. While in stable times organisational knowledge tends to persist, in times of change it is questioned and re-created. One of the key problems in the school formation processes was that re-creation of University norms and rules was not informed by ideas and proposals co-created by actors in these processes. While the tension between the social structure level and the social interaction level is typically present (due to contradicting nature of knowledge), we identify in our case situation that actors needed more effective and meaningful knowledge sharing with social structure level. Given that there were severe space and time limitations for this to happen, the only way to achieve it would have been by providing a specific IT-based support.

This is where we recognise the needs of social actors to be assisted in their specific knowledge creation and sharing processes and at the same time to be aware and informed by other processes in which they did not, personally, participate. In the UEA restructuring process, email and intranet forums were extensively used for dissemination of documents and discussions, however neither of these technologies were adequate to fulfil these needs. They undoubtedly improved the process, and it is challenging to imagine how much more the process would have failed without them, but they were still an incomplete solution. So what was lacking? First let us consider what was needed: a means of knowledge sharing and knowledge creation within groups that contains not only the full history and transcript of that process, but offers a distillation of the major issues and ideas that can be passed on to further communication forums; the same ability between groups (still within the social interaction level, but situated within different cultures, allowing for identifying misunderstandings and misconceptions (eg, culturally embedded) and that permit the building of new shared meanings and the construction of a new collective identity; yet again, the same process between the social interaction level and the social structure level.

The need for mutual influence between the social structure level and social-interaction level was also recognised by the top University executive, most specifically before major decisions were made, legitimated and disseminated. For instance, the Vice Chancellor invited all members of the UEA for their input by e-mail and via web forum. Such use of IT, however, provided a very narrow communication channel capacity, in a vertical fashion only. What was needed was a more intelligent public discourse support system that would enable both horizontal social-interaction on distance and exchange with social structure level, in particular in relation to decision-making processes. A new type of IT-based support for knowledge sharing is required to enable the rich source of innovation from the social interaction level to feed the organisational knowledge creation process. At the same time, such a system will have to have the reverse role to make organisational knowledge widely understood, internalised and applied so as to increase the individual and group members' identity with the organisation. While very brief, this discussion illustrates how better understanding of the nature of knowledge and knowledge management processes can assist in exploring IT-based support.

6. CONCLUSION

The objectives of this paper were to contribute to the understanding of the nature of knowledge management phenomena in organisations and the needs of social actors in various knowledge management processes. The paper achieves these objectives by first proposing the *sensemaking model of knowledge management* and then demonstrating how it can be applied in an empirical study. The paper shows how the application of the *sensemaking model of knowledge management* enabled us to understand processes of knowledge creation and sharing in a time of organisational change. Based on that understanding, we were able to gain deep understanding of actors' needs in various knowledge management processes, and derive requirements for IT based support. The paper illustrates how the proposed model can be used as a conceptual foundation for exploring requirements for IT-based KMS.

By distinguishing different types of knowledge at different levels—individual, collective, organisational and embedded in culture—the sensemaking model helped us gain deeper understanding of the change process and its essential problems. We were able to explain how particular conditions (geographic dispersion of individuals, their previous experiences from different university members and academic structures) shaped individual and group views and actions. More importantly, by interpreting the data within the four-level sensemaking model of knowledge management we could understand better the needs of these individuals and groups in their making sense of and acting in the process.

The proposed *sensemaking model of knowledge management* is going to be applied in several case studies with the aim to test it and develop it further. Through our case study we have already learnt that there is a need to develop a much more detailed model of the social interaction level that will reflect intra-group and inter-group knowledge creation and sharing processes. Ultimately the outcomes from several case studies will enable us to develop a new methodology for investigating knowledge management in organisations and designing IT-based KMS.

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