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INVESTIGATING THE “KNOWLEDGE” IN KNOWLEDGE MANAGEMENT: A SOCIAL REPRESENTATIONS PERSPECTIVE

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ABSTRACT

A panel at ICIS 2005 in Las Vegas, NV questioned how social representations (SR) theory could illuminate central questions related to the research and practice of Knowledge Management (KM). The panel included IS researchers who examined different aspects of SR theory and their implications for the understanding of knowledge and knowledge management dynamics. The topics covered in the panel and this report include: the representations of knowledge in the history of KM systems, the role of discursive processes in the emergence of new representations and knowledge, the non-consensual nature of knowledge of various communities, and the potential contributions of a structural approach to SR for situated learning research. This paper elaborates on the presentations of the panel and summarizes the issues raised during its discussion session.

Key words: Knowledge, social representations, discourse, framing, core-periphery, Knowledge Management systems, anchoring, objectification, active minorities

INTRODUCTION

The purpose of this article is to stimulate research and discussions within the Knowledge Management (KM) field, drawing from the insights and methods of Social Representations (SR) theory. Social representations have been investigated in the field of social psychology for more than forty years. The richness and diversity of this research makes it especially well-suited to explore key challenges of Knowledge Management research and practice by focusing attention on the social psychology of knowledge. This article is based on a panel presented at ICIS 2005, Las Vegas, on social representations and knowledge management. What brought the panelists

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together (Richard Boland, Case Western University, Chair; Elizabeth Davidson, University of Hawaii; Suzanne Pawlowski, Louisiana State University; Ulrike Schultze, Southern Methodist University; and Emmanuelle Vaast, Long Island University) was the conviction that SR theory is well-suited to advance KM research and practice. While all panelists shared this conviction, each emphasized a different aspect of SR theory and its specific implications for KM theory and practice.

The following sections reflect the presentations that each of the panelists made during the ICIS panel. Richard Boland introduces four key challenges to KM theory and practice today and suggested that SR theory can help address them. Ulrike Schultze discusses the first of these challenges by analyzing knowledge management as an organizing vision and tracing it through its "career." Her historical review of knowledge management demonstrates how the meaning and representation of knowledge and its management have changed over time. Elizabeth Davidson then tackles the second challenge. She discusses the importance of discourse in the emergence of social representations and knowledge through blogging. Emmanuelle Vaast examines the third challenge, related to the social nature of knowledge. She shows that different communities represent their world in various ways, which leads to question the assumption of knowledge as consensual. Suzanne Pawlowski studies the fourth challenge. She shows how a structural perspective on social representations can be used to advance understandings of situated learning and knowledge in organizations. The concluding remarks summarize key insights for KM theory and practice from both the presentations and the remarks made during the Q&A part of the panel.

I. SETTING THE STAGE: KM AND SOCIAL REPRESENTATIONS THEORY – RICHARD BOLAND

Current economic conditions as well as theoretical developments such as the knowledge-based view of the firm have given way to the idea that firms' survival and performance depend on the way they deal with knowledge [Kogut and Zander, 1992; Spender, 1996]. Making sure that knowledge workers have access to knowledge bases and develop their competences, fostering innovation from cross-functional knowledge, and developing better informed relationships alongside the supply chain, are among the strategic ways in which management of knowledge can take place. Information Systems and, in particular, Knowledge Management Systems (KMS), have been implemented in order to encourage these learning and innovation dynamics [Alavi and Leidner, 2001; Sambamurthy and Subramani, 2005]. However, "knowledge" is intangible and especially difficult to define, let alone manage [Carlile, 2004; Schultze and Orlikowski, 2004; Walsham, 2002].

Four key challenges faced by the KM field have made the elusive nature of knowledge especially perceptible. First, as new generations of KMS systems have come to the market, replacing "old" expert systems with recommender systems, for instance, the very definition of what the "knowledge" is that has to be managed with KMS has shifted. These shifts need to be better understood. Second, knowledge is not merely within the heads of individuals. Rather, it comes from inter-personal communication processes. New trends based on the use of interactive web-based technologies, such as blogging, affect the emergence and fluidity of what members of communities consider to be their knowledge. Third, the idea that knowledge is social and dependent on the communities to which people belong is troubling. Sharing knowledge among people who belong to different communities is difficult, since different communities do not necessarily rely on the same knowledge base that would allow them to interpret the world in consistent ways. Fourth, knowledge is situated and very difficult to transfer. KM attempts to transfer knowledge often fail to recognize that people make sense of events and experiences differently, according to their situations and to their specific preexisting sets of values and ideas.

In this panel, we suggest that insights from Social Representations (SR) theory can help advance the KM field with regard to these challenges. Social representations may be defined as the stable and socially shared set of common knowledge and ideas that agents elaborate and communicate

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to make sense of and act in their environments [Jodelet, 1989; Moscovici, 1973, 1984; Vaast and Walsham, 2005].

In this panel we refer to SR theory as a theoretical framework that relies on the concept of social representations. This concept has been at the core of the development of social psychology for more than forty years. Social psychologists who have been working on social representations (e.g., Moscovici, Jodelet, Abric, Doise) have developed various conceptualizations and have adopted various methods. There are thus different theories of SR, just as there are different theories of attitude or of practice. This paper uses the phrase “SR theory” to refer to the central tenets of the main works that have investigated social representations.

In particular, at the origin of the widespread interest in social representations lies Serge (Moscovici's) [1961] interest in rehabilitating common knowledge. Instead of considering common knowledge as inferior to scientific knowledge, Moscovici wanted to investigate the active and reflexive processes through which any idea became integrated into laymen's knowledge [Moscovici, 1961; Moscovici and Markova, 1998]. Hence, SR theory considers knowledge from the point of view of the people involved, rather than from an external perspective [Pawlowski et al., 2004].

Moreover, social representations are socio-cognitive: they are cognitively conceptualized but also shared among members of a community. Due to their obvious character (they are common knowledge), social representations are often taken for granted. They remain implicit within the community [Jodelet, 1989]. Yet, because representations are shared, they help us make sense of the world, act, and communicate with one another [Abric, 1994a; Moscovici, 1973].

Finally, social representations are stable but not static. The process of representing is triggered by people's actions and interactions [Flament, 1994; Grenco, 1995]. More specifically, SR theory has emphasized the role of active minorities [Moscovici, 1961] as well the related processes of anchoring and objectification [Orfali, 2002] in the transformation of social representations.

In the following sections, each panelist tackles one of the four challenges of KM mentioned earlier and advances key implications for KM research and practice of adopting a SR theory.

II. REPRESENTATIONS OF KNOWLEDGE – A HISTORY OF KM SYSTEMS – ULRIKE SCHULTZE

In this segment of the panel, I will take a historical perspective of knowledge management. I analyze knowledge management as a particular kind of social representation, namely an organizing vision [Swanson and Ramiller, 1997], that is, “a vision for organizing that embeds and utilizes information technology in organizational structures and processes” (p. 460). An organizing vision is a social representation about the organizational implications of using an information technology. It is developed in an inter-organizational context, by a community that is made up of heterogeneous players including vendors, consultants, IT professionals and early adopters, who are united in their interest to provide a public interpretation of the IT innovation. As a social representation, it is the product of community discourse, which may or may not be based on material processes and technologies. The purpose of organizing visions is to make the new technology understandable and legitimate, and to mobilize adoption.

Research on the origins of knowledge management highlights that knowledge and efforts to manage it are not recent phenomena (e.g., Wiig, [2000]; Grant, [2000]). The desire to create new knowledge, transfer, and preserve it has been central to human development throughout civilization. A historical review of knowledge management highlights that “all management is, in effect, about managing knowledge” [Grant, 2000: 28], and that managing knowledge as an inextricable and implicit aspect of all management [Wiig, 1997].

However, knowledge management as an organizing vision [Swanson and Ramiller, 1997] only emerged in the 1990's. According to Prusak [2001], a 1993 conference specifically devoted to knowledge management marked the beginning of the organizing vision. While others may

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disagree with Prusak, there is general consensus that the emergence of knowledge management as an organizing vision was buoyed by the confluence of increased globalization, increased digitization, the end of the BPR wave and a knowledge-centric view of the firm [Grant, 2000; Prusak, 2001; Wiig, 1999].

More recently, however, the organizing vision of knowledge management appears to have lost its luster and is applied to technology solutions less frequently. For instance, in 2004 the CEO of Tacit Knowledge Systems Inc., David Gilmour, rejected the term knowledge management to describe the firm's ActiveNet product [Claburn, 2004]; he instead referred to it as "part of the on-demand enterprise infrastructure." Interestingly, the same David Gilmour [2003] had previously described ActiveNet as a way of fixing knowledge management. Furthermore, Davenport and Glaser [2002] extol the virtues of "baking" knowledge into the systems that support standard business processes so that extant knowledge becomes an inevitable part of every-day decision making. For instance, knowledge about drug interactions can be embedded into a physician's drug prescription system. Such a system would alert the physician to problematic prescription decisions based on contraindicative interactions between drugs.

This suggests that knowledge management, as an organizing vision, may have come to the end of its "career" [Ramiller and Swanson, 2003], and that the work of managing knowledge may once again become an implicit and invisible part of organizing and managing.

By treating knowledge management systems as texts within the community discourse out of which social representations are born, I will briefly trace the career of knowledge management as an organizing vision. I will argue that knowledge management is again becoming an inevitable and implicit part of managing. In my historical review, I will focus on how the meaning and representation of knowledge and its management has changed over time. I will review one knowledge management technology for each of the last four decades: MYCIN, an expert system (1970s), a listserv used by a community of practice (CoP) in the development of the Common LISP language (1980s), grapeVINE, a Lotus Notes-based knowledge management application (1990s), and a portal that used Autonomy's agent-based technology to build a competence location system (2000). In my analysis, I highlight the representation of the knowledge problem, the representation of the solution, and the representation of knowledge in the system's design.

EXPERT SYSTEMS: MYCIN (1970S)

Expert systems are knowledge-based systems that achieve expert-level performance through the use of artificial intelligence techniques such as symbolic representation, inference, and heuristic search [Benfer et al., 1991]. They are frequently described as decision support systems [Dhar and Stein, 1997; Davenport, 2005], as they support -- rather than automate -- decision making. The knowledge represented in expert systems is typically narrow and domain-specific.

Within the domain of antimicrobials, MYCIN focused specifically on the process of therapy selection for patients with bacteria in the blood. In particular, MYCIN helped physicians distinguish between different forms of meningitis [Clancey, 1987]. Knowledge took the form of deductive and inferential statements, which represented experts' heuristic, probabilistic relationships between phenomena. These relationships were then encoded as decision rules in MYCIN's knowledge base [Shortliffe, 1976]. These rules are represented in deductive "if-then" logic.

Even though in trials MYCIN outperformed medical students and practicing physicians and was on par with experts in bacterial diseases, it was never put into production [McCarthy, 1984]. This was, in part, because of concerns about the system's inability to know its own limitations. Due to its narrow domain knowledge, MYCIN would make a treatment recommendation that was correct but incomplete because it only took the bacteria in the blood into account. Thus, the effective use of MYCIN required a user (physician) who had common knowledge about medical treatment as a complement [McCarthy, 1984]. Common knowledge was defined as rules of thumb that the average physician learns through experience.

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LISTSERVS: THE COMMON LISP PROJECT (1980S)

In the early 1970's the scientific community used email via the Defense Department's ARPANET, which also had listserv features that supported distributed group work. A specific application of the ARPANET email system was the Common LISP listserv documented by Orlikowski and Yates [1994]. The Common LISP (CL) project was to produce a standard LISP language. The LISP designers were geographically dispersed computer scientists, located in academia and industry. However, they were part of the same occupational community, and most of them knew each other either from interactions at professional conferences or from their training at either MIT or Stanford University. As such, they represented a community of practice (CoP) [Wenger, 2000].

The CL members were also regular users of electronic mail and decided to do most of their work on this project electronically. Throughout the two-and-a-half year project (April 1981-December 1983), which ultimately produced a reference manual entitled "Common LISP: The Language," the 117 CL members generated 2000 postings. Participation was uneven among the members: 17 participants contributed 1332 posts, and of those 17, five members were particularly active.

Orlikowski and Yates [1994] applied a genre rather than a knowledge lens to their analysis of the CL listserv. Nevertheless, their analysis provides us with insight into the representation of knowledge in this system. Their results highlight four communication genres, i.e., typified communicative acts, which reflected the group's knowledge work. These are the memo, the dialog, the proposal and the ballot system, all of which were used to share both domain-specific and common knowledge within the CoP. Additionally, however, Orlikowski and Yates [1994] highlight the role that implicit process knowledge plays in the smooth functioning of distributed work. Even though the listserv archive contained only explicit knowledge (i.e., documented discussions, proposals and ballots), this form of knowledge was made possible by the implicit knowledge – such as norms around email communication and the nature of the computer-language development task – that was embedded in the community. This highlights the importance of implicit process knowledge, which is typically well-established in such domain-specific, occupational communities as the CL community.

LOTUS NOTES GROUPWARE: GRAPEVINE (1990S)

Of all the technologies analyzed here, grapeVINE is the only one that was labeled a knowledge management technology by its developer and, therefore, by its users. It promised to deliver on the knowledge management slogan of providing "the right person" with "the right information" at "the right time." To this end, it mimicked the informal organization (i.e., the human grapevine) that operates in most organizations. The human grapevine is essentially a manual information filtering and processing mechanism: a member of the organization takes information (e.g., news or a rumor) that s/he thinks is so important that others should know about it and passes it on to others, who in turn pass it along to still others in their (informal) network. As it moves through the grapevine, the information changes as each person passing it on typically adds his/her interpretation and signification.

The designers of grapeVINE represented this informal knowledge management process in terms of an "alert – assess – escalate" model, which they also referred to as "gatekeeping." Gatekeepers were people who either had an interest in a topic area or who were considered "subject matter experts." They were expected to scan the environment continuously for interesting news and information (alert). The gatekeeper would then ascertain the information's credibility and relevance to the organization (assess). If the information was found to be of significance to the organization, it would be passed on to others together with an explanatory commentary or interpretation (escalate).

Another knowledge management promise that the grapeVINE design intended to fulfill related to the conversion of tacit knowledge into explicit knowledge. The assumption was that in assessing the relevance of a bit of information, the gatekeeper would confront his/her tacit assumptions regarding the organization, its competitors, and so on. If the information was deemed relevant,

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the grapeVINE system prompted the gatekeeper to make these assumptions explicit, thus converting tacit knowledge into explicit knowledge, which could be shared and stored. Thus the representation of knowledge in the grapeVINE system was gatekeepers' situated and tacit knowledge, which they made explicit and actionable in their assessment, interpretation and escalation of new items.

COMPETENCE MANAGEMENT SYSTEMS: VOLVO'S VIP PROTOTYPE (2000)

Competence is "an underlying characteristic of a person, which results in effective and/or superior performance in a job" [Boyatzis, 1982]. Competence Management Systems (CMS) represent a class of information systems specifically designed to assist with tasks such as competence sourcing, competence development through training and coaching, and the staffing of projects [Baladi, 1999]. One of the challenges with these systems is maintaining them with up-to-date information about individual employees' competences. In an effort to develop IT design principles for effective CMS, Lindgren et al. [2004] developed and empirically assessed the usefulness of a CMS prototype that sought to address this problem. Their prototype was developed as a complement to the commercial CMS that Volvo IT, one of the firms participating in the action research study, was using. The prototype was called the Volvo Information Portal (VIP), and it employed Autonomy's AgentWare platform as the engine for advanced pattern-matching of textual data.

The VIP prototype worked as follows: VIP allowed the users to define intelligent agents that searched a database for intranet documents matching the user's interests. By defining one or more agents, VIP users were thus able to monitor the corporate intranet for items relevant to their interests. The users defined their interests in a free-text natural language format from which the system then created an internal, digital representation. If the search retrieved a document that was particularly interesting, the user could "retrain" the intelligent agent to incorporate the digital representation of this document into the agent's profile. In this manner, the agent developed an implicit interest profile that went beyond the explicit search criteria stated by the user. Instead, the implicit profile was increasingly based on the user's behavior, i.e., reading and rating the relevance of documents. Since the digital representation of the search agent was no longer identical to the user's explicit search terms, the user lost insight into how his/her interests, which were seen as an important part of competence, were represented in the system.

IN CLOSING

Tracing the history of knowledge management has highlighted important differences in the way that knowledge and its management have been represented in this organizing vision. It is interesting to note the distinction between expertise and competence, that is, the representation of knowledge used in the first (expert systems – 1970s) and last (competence management systems – 2000s) system in this review. Expertise is defined as judgmental knowledge [Shortliffe, 1976] related to a specific field. Expertise is therefore closely associated with the ability to reason logically and to make decisions. Competence, in contrast, implies a broader view of knowledge. It is defined as possessing skills and characteristics that are critical for effective and/or superior performance of a task [Boyatzis, 1982]. These skills and characteristics include motivation, self-image, values, moral standards, and norms of social behavior. Thus, while knowledge viewed as expertise seems to emphasize the cognitive aspects of knowledge work, knowledge as competence embraces emotional and social aspects as well.

Furthermore, my analysis highlights a number of apparent trends in the organizing vision of knowledge management and its representation of knowledge. For instance, early knowledge management systems were more focused on supporting decision making tasks using narrow, domain-specific knowledge, whereas more recent solutions focus on the sharing of common knowledge. Representations of knowledge in the early systems were explicit and visible (e.g., rules and keywords), whereas knowledge representations in later systems are increasingly implicit and invisible (e.g., patterns dynamically derived from data and embedded in the algorithms of intelligent agents and collaborative filtering technologies). Furthermore, as the

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representations of knowledge become more implicit, vast amounts of data drawn from users' behaviors are used as indicators (and surrogates) of users' interests, knowledge and competence.

A future research opportunity is to explore the connection between the social representation of an organizing vision like knowledge management and its specific content, e.g., the representation of knowledge. To what extent, for instance, does the increasingly implicit nature of knowledge evident in knowledge management technologies account for the end of knowledge management's (that is, the organizing vision) career?

III. SOCIAL REPRESENTATIONS AND THE DISCURSIVE NATURE OF KNOWLEDGE – ELIZABETH DAVIDSON

SR theory provides valuable insights into the processes through which knowledge is negotiated and applied. In this section, I consider how knowledge develops through discursive practices and interaction and use the example of "tech blogging" to highlight facets of these discursive processes. I then consider how SR theory relates to a well-known socio-cognitive approach in IS research, technological frames of reference (TFR), to suggest how SR theoretic-approaches could inform KM practice and research.

"We create representations in order to make familiar what is strange, disturbing, uncanny" [Moscovici 2001: 20]. In various writings, Moscovici reiterated this core assumption. When members of a social group are faced with something new, puzzling, or troubling, they try to make sense of it together, through conversations and interactions (oral and written). Moscovici referred to such interactions "in the cafés" to indicate the type of day-to-day, informal settings in which people come together and discuss topical issues. Moscovici was particularly interested in how scientific knowledge, which he characterized as knowledge that develops through rigorous procedural investigations, is adapted in society as common knowledge. Common knowledge reflects beliefs and interpretations that develop as a result of social negotiations and discourse around unfamiliar phenomena. For example, some of Moscovici's early works examined how scientific knowledge about psychoanalysis was transformed into common knowledge of and a vocabulary for mental illnesses [Moscovici 1961, 1973]. Although the term "representation" suggests a static belief structure, Moscovici was interested in the social processes through which representations emerge, take shape, and eventually change. Notably, he and collaborators considered the role of "active minorities" [Moscovici, 1961; Orfali, 2002], who challenge existing social representations through discourse that may bring about innovation and change in established representations

An example of how social representations of knowledge develop through discourse and interaction and the roles of information and communications technologies in these discursive processes is blogging on the Internet. A recent discursive exchange about blogs on high technology innovations or "tech blogging" illustrates not only that Internet blogging is a new medium for social interaction and discourse (an "e-café" so to speak) but also highlights the discursive nature of social representations related to technical knowledge and to "tech bloggers" as producers of such knowledge.

The incident described here is a small slice of a wider discourse and began with the publication of an article in the *Wall Street Journal* by Lee Gomes, a technology staff writer for this institution, entitled "Tech blogs produce new elite to help track the industry's issues" (*WSJ*, 12/7/05, pg. B1). In his article, Mr. Gomes attempted to anchor this phenomenon -- tech blogging -- in the familiar context of established knowledge brokers -- mass media outlets such as the *WSJ* -- and to objectify tech bloggers as "the new elite." He first rejected the "revolutionary" expectation that bloggers are a "grass roots army" who will overturn the "out of touch, elitist, ossified" mainstream media by asserting that there is a "new elite" of "A-list bloggers." He identified a few by name and by blog URL (ironically misspelling one blogger's URL) and described how these bloggers' practices (e.g., throwing "Gatsby-like parties") and the actions of entrepreneurs and even

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“mainstream journalists” towards “A-list bloggers” demonstrate their elite status. Gomes wrote: “In fact, with the influence peddling universe in this state of flux, it’s not uncommon for mainstream reporters, including the occasional technology columnist, to lobby bloggers to include links to their print articles.” He concluded with the assertion that “the difference between the old media elite and the new blogging elite is that the latter gets redefined much more quickly. All it takes is attracting links from other bloggers” – a phenomenon he characterizes as “software-mediated democracy.” Thus, through anchoring and objectification, Gomes attempted to reinforce embedded, cultural expectations about who in society creates knowledge (the “elite”), although he allowed that the channels for knowledge dissemination (Internet blogs versus mainstream media outlets) may change.

Within minutes of his article posting to the *WSJ*’s online site and appearing in print, Mr. Gomes’s representation of tech bloggers was challenged by the bloggers themselves, using blogging as their medium for discussion. Blogs commenting on Gomes’s article, along with responses to these blogs, were aggregated through one of the “A-list bloggers” Gomes had identified (Gabe Rivera on the site <http://tech.memeorandum.com/>). This list of blogs grew and changed throughout the day (December 7, 2005). Some bloggers merely linked to Gomes’s *WSJ* article or began a tangential discussion on specific aspects of the article. For example, one blogger keyed off Gomes’s mention of Gatsby-like parties to discuss *The Great Gatsby*.¹ Others questioned Gomes’s representations directly, suggesting that tech bloggers were more nimble and in-touch with technology than mainstream reporters and are in fact replacing (“disintermediating”) mainstream journalists.² Still others reflected on how tech blogging changes the way technologists access and utilize news about high tech developments or suggested how aggregating algorithms might be improved. That is, the *active minority* of tech bloggers seized the opportunity to represent themselves and their role in creating and disseminating knowledge about technologies by engaging in active discussion and interaction about the Gomes article.

This brief example represents only a small sample of the discourse about blogging generally, and about tech blogging specifically; it is not representative of the range of ideas or attitudes about this social phenomenon. However, the example does clearly illustrate the discursive nature of social representation and challenges to social representations of knowledge in the Internet era; it also highlights several facets of these discursive processes. First, we could ask, is tech blogging, and are tech bloggers, really the object of evolving social representations, and if so, why? With high-stakes changes rapidly and continually occurring with high technology, producing useful knowledge and conveying this knowledge is critical to technology entrepreneurs, investors, and developers. Gomes’s article hints that the “media elite” (such as the *WSJ* and its reporters) are trying to make sense of, and perhaps to control through their social representation, the influence that tech bloggers have among these constituents. As Gomes commented, tech blogging has brought about challenges to institutionalized norms and practices; the constituents who in the past attended to the media elite now favor “A-list” tech bloggers, and some members of the media elite also curry favors (e.g., requesting bloggers link to their articles). That is, the phenomenon of tech blogging is an instance of the “unfamiliar” and “disturbing” in modern society, related to information technology’s role in social life. The flurry of blog discussions around Gomes’s article illustrated how a social representation of such phenomena emerges and is shaped through discourse and interactions among members of the social group (and possibly, society at large), and how an active minority may play a particularly influential role.

This brief example also highlighted the role that narrative sensemaking has in social discourse [Bruner, 1990; Boland and Tenkasi, 1995; Davidson, 2002] and thus in the formation of social

¹Richard MacManus http://www.readwriteweb.com/archives/the_great_arrin.php/ posted December 7, 2005 12:54 PM.

²JamesRobertson <http://www.cincomsmalltalk.com/blog/blogView?showComments=true&entry=3311396119> posted December 7, 2005, 8 :15 PM ET

representations. As Bruner [1990] commented, narrative sensemaking is an essential human socio-cognitive capability, allowing people to incorporate the non-canonical into conventional ways of thinking and acting. Gomes's article created a storyline in which the non-canonical tech bloggers are no different than (though possibly inferior to) the canonical mainstream media in their actions and desires. Within the community of tech bloggers, discussions of the meaning of Gomes's *WSJ* article took on a different narrative structure, and the ongoing aggregation of blog links itself created a narrative of the evolving discussion of the issues. Bloggers created various storylines that attributed motives and intensions to Gomes for writing the article as well as to bloggers who responded. These narratives largely shared the theme that tech bloggers are finally being recognized by mainstream media as the true experts in the rapidly shifting technological world, that is, the heroes who challenge of the status quo.

Finally, this example illustrated how traces of the discursive processes through which social representations emerge and evolve are ephemeral, as is the knowledge managed within a KM system. In this instance, the aggregated list of blogs referring to Gomes's article on the Techmemeorandum.com aggregation site -- the "knowledge archive" of this discourse -- changed rapidly throughout the day. At first, new blogs were added under the topic and link to Gomes's article. Then the topic itself lost currency as different discussions of high technology issues gained popular readership. By day's end, the aggregated list of blogs on this topic had evaporated. Ironically Gomes's article, preserved in *WSJ* archives and indexed in electronic reference databases, may be the most easily retrievable artifact of this discourse stream, although his article does not capture the refinements and reinterpretations of the tech blogging community, their arguments and counter-arguments, their points of agreement and disagreement. Practically speaking, this "knowledge" exists within the tech blogging community but is not readily accessible outside of the community.

Having examined the discursive nature of social representations through this example, it is helpful to more formally "anchor" SR theory to a socio-cognitive approach that is familiar to the IS research field -- technological frames of reference (TFR) [Orlikowski and Gash, 1994] -- in order to think about how SR theory might be used in KM and KMS research and practice. The TFR concept draws from social construction of reality [Berger and Luckmann, 1966] its ontological and epistemological foundation. Moscovici developed his ideas about social representations in the early 1960s in Europe, more or less in parallel with the development of social constructivist approaches in the U.S. Social representations and social construction of reality theories similarly focus on negotiation of meaning through social interaction and the preeminence of interpretation in sensemaking and action [Jovchelovitch, 2001]. Thus, it is not surprising that the concept of a social representation and a technological frame have much in common. Both address shared understandings of social phenomena that develop through interaction and that guide actions. The TFR framework focuses on technology-related phenomena in organizational settings whereas TR theory is broader, encompassing any socio-cognitive phenomena within society (particularly the "unfamiliar"), for example, mental illness and its treatments [Moscovici, 1961], social fashion trends [Silvana de Rosa, 2001], or biotechnology [Wagner and Kronberger, 2001]. A fundamental difference in the applications of these two approaches is that SR theory views the social representation *per se* as an interesting phenomenon, whereas TFR research applies frames as an explanatory concept. For example, incongruence or difference between groups' frames is often cited to explain failed attempts to implement new technologies, but researchers seldom question the content or origins of these organizational frames [Davidson, 2006].

Social representation theory suggests several ways in which investigations of knowledge work and KMS utilizing a socio-cognitive approach such as TFR analysis might be enriched. First, SR theory challenges the researcher to consider how organizational frames are derived from societal-level representations. That is, if organization members implementing a KMS understand knowledge as a tangible artifact that can be digitally "captured," stored and retrieved through IT, one could ask whether these beliefs are drawn from societal representations of knowledge and of technology. This in turn might foster cross-cultural comparisons of KMS applications and experiences.

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Second, SR theory challenges the researcher to consider how and why societal-level representations of IT artifacts arise, how these representations evolve and change, and how societal level and organizational level interpretations interact – that is, to treat the social representations of KM and KMS as phenomena of interest. Ulrike Schultze's discussion of eras of KM and KMS highlighted how social representations of knowledge and applications of information technologies to knowledge-related organizational activities have evolved over time. As Ulrike pointed out, Swanson and Ramiller's [1997, 2004] concept of organizing visions provides another useful anchoring point for SR theory in the IS literature. Organizing visions develop around new applications of information technologies, often centered on evocative metaphors and "buzzwords." The concept of an organizing vision incorporates the conceptual or verbal aspect of a social representation as well as its imagery; both approaches draw on assumptions about the negotiation and institutionalization of interpretations through social discourse. Joining SR theory and studies of organizing visions could lead researchers to consider how societal understanding of knowledge change, as new information technologies are brought into practice. Tech blogging and the challenges this technology and related social practices pose to knowledge-creating institutions is one such example.

Whether we examine the technological frames related to a KMS *within* an organization, or a KMS organizing vision that develops *between* organizations, social representations theory heightens our awareness of underlying social psychological processes at work at the individual, organizational and societal levels of analysis. Recalling the example of tech blogging, a TFR study might ask, how do organization members understand blogging technology and the organizational practices in which it is embedded? SR theory challenges the researcher to delve into cultural beliefs and values that provide the core themes about knowledge, for example, societal expectations about knowledge "elites" versus the "common knowledge" of amateurs that are challenged by blogging technology. SR theory also focuses attention on the dynamic social process of framing knowledge about technology [Davidson, 2002], as the example from the dynamic discussion about tech blogging by the bloggers themselves illustrated. Combining TFR and SR approaches, a researcher would not attempt to generalize an organizational study to society, but rather would seek to understand how societal representations are present within organizationq, and in critical cases, how organizational experiences come to influence societal discourse and knowledge.

To summarize these comments on the discursive aspects of social representations theory and its potential contributions to knowledge management practice and research, SR theory highlights the expectation that common knowledge, embedded in social representations, is ephemeral, constantly shifting and contextually bound. Thus, managers must question how such ephemeral knowledge can be "captured" and archived and whether it is even important or feasible to do so. SR theory also suggests that cultural values are integral to knowledge and are embedded in social representations as core themes that underlie technological frames (at the organizational level) and organizing visions (at the inter-organizational level). For KM researchers, a greater appreciation of the cultural values embedded in social representations of knowledge, knowledge management and KMS provides a theoretic basis to examine how societal sensemaking penetrates and is adapted within organizations.

IV. QUESTIONING THE CONSENSUAL NATURE OF KNOWLEDGE – EMMANUELLE VAAST

Readers may be familiar with Descartes' comment that:

Of all things, good sense is the most fairly distributed: everyone thinks he is so well supplied with it that even those who are the hardest to satisfy in every other respect never desire more of it than they already have.

René Descartes, *The discourse on method*, 1637

Descartes may or may not have been ironic, but his saying is characteristic of the old and prevalent optimism in people's ability to develop knowledge. For centuries, the desire to conquer

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knowledge has motivated intellectual developments and scientific discoveries. Scientists and intellectuals incarnated erudite figures whose role was to uncover the true knowledge. Behind these developments was the assumption that if everyone was to become reasonable and knowledgeable, then they would develop the same knowledge. Knowledge could be agreed upon and shared once the darkness of ignorance is dispelled.

In this segment, I question the idea that knowledge is one and independent from situated contingencies by considering that people's knowledge depends on the communities to which they belong. In a social representations perspective, "*good sense*" may actually be "*fairly distributed*," but its distribution is dependent on the social context.

SOCIAL KNOWLEDGE

The idea that knowledge is social is not new [Brown and Duguid, 1991, Duguid, 2005; Lave and Wenger, 1991, Nonaka, 1994]. Orlikowski and Gash [1994], for instance, showed that different communities (of managers, technologists, and users) developed different technological "frames," that is, assumptions, values, and expectations regarding a new technology. Inconsistencies in the frames of different communities make it difficult for their members to understand each other and affect the development and use of new technology [Davidson, 2002]. Boland and Tenkasi's [1995] notion of "communities of knowing" also advances on the idea that organizations are populated by different communities that have specific objectives, practices and experiences and, as a consequence, that have also developed their own world. In what follows, I show how key tenets of SR theory allow us to deepen the implications of this idea of social knowledge by advancing the implications of its non-consensual character.

SOCIAL REPRESENTATIONS AND THE PLURALITY OF KNOWLEDGE

Several aspects of the aforementioned definition of social representations question the idea of consensual knowledge.

First, investigating social representations involves considering objects from agents' perspectives and exploring how they make sense of their world in their own terms. In this sense, rationality is not only bounded, but it is also socially contingent on agents' perspectives and depends on their "library" of values, ideas, idioms that help them make common sense of objects [Moscovici and Markova, 1998: 382-386, Moscovici, 1998: 454].

Moreover, when social psychologists working on representations investigate "common sense" knowledge, they do not understand it in a negative way. SR theory refuses to set an objective hierarchy between expert knowledge and common sense knowledge [Moscovici, 1961]. This idea echoes KM research that has discussed the role of experts vs. peers in giving advice on professional matters [Constant et al., 1996; Finholt et al., 2002].

What is more, social representations are shared among members of the same communities, but not necessarily across communities [Doise, 1973]. Moscovici and Markova [1998] characterized social representations as "polyphasic:"

"Just like language is polysemous, so knowledge is polyphasic and people in fact have different representations depending on to which group they belong, the profession they exercise, and so on." (Moscovici & Markova, 1998: 385)

The idea that different communities know different things about the same objects (e.g., engineers vs. marketing professionals in new product development) holds key implications for knowledge sharing and coordination [Sambamurthy and Subramani, 2005]. Social representations are often deeply embedded in social dynamics. Untold differences in representations may explain issues regarding the misunderstandings and miscommunications that often occur when members of different communities attempt to share knowledge and to work on common issues [Carlile, 2002, 2004].

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Furthermore, social representations are stable but not fixed once and for all. Socio-psychologists have been interested in both the representations that shape understanding and in the processes of representing that emerge over time [Allard-Poesi, 1998, Vaast and Walsham, 2005]. The literature has especially investigated two processes through which representations change and become stabilized: anchoring and objectification [Wagner et al., 1999].

Anchoring is the process of making the meaningless meaningful by associating it closely to objects that already have a meaning [Jodelet, 1989]. A new object is anchored to pre-existing knowledge and gets assessed through the lens of this pre-existing knowledge. For instance, if a new political party appears in the political landscape of a democracy today, and if this party is from the extreme-right, it is very likely that it will be assimilated to or, at the very least, compared with Nazi and fascist references [Orfali, 2002: 401].

Objectification is the process of integration of an object into social reality [Billig, 1993]. This new object may be tangible (such as a new KMS) or highly abstract (such as quantum physics or the idea of balance between private and professional life), but it can be grasped by being integrated into common sense reality that gives it sense and a bounded meaning.

Anchoring and objectification are best understood in a dialectic relationship with each other [Orfali, 2002]. They have opposing properties, in the sense that anchoring relates new objects to pre-existing ones while objectification introduces new objects to social reality. However, on the other hand, anchoring and objectification are also mutually constitutive, and a new object is usually at first understood through anchoring and then acquires its own place in the common sense reality.

AN ILLUSTRATION – REPRESENTING IS SECURITY IN A HEALTHCARE ORGANIZATION

In order to investigate the implications for KM of considering the social representations of different communities, I applied SR theory to the study of IS security. More specifically, I wanted to contrast the ways in which members of different occupational communities who worked in the same healthcare organization represented IS security.

I was interested in the healthcare industry because it has become more and more dependent on the use of information technology and has recently faced changes in the legal framework of the security and privacy of patients' information (Health Insurance Portability and Accountability Act (HIPAA) rule) [Baumer et al., 2000, Chiasson and Davidson, 2004, Mercuri, 2004]. This context made it likely that members of the investigated organization (a hospital located in a urban area of the Northeastern U.S., henceforward called Eastern Hospital) would know certain things about IS security.

In order to get a sense of the representations of members of various occupational communities (e.g., physicians, nurses, IT professionals, clerks), I relied on semi-directed interviews with some members of these communities. Table 1 summarizes the number of respondents per occupational community.

Occupational communities	Physicians	Nurses	Managers	Social workers	Clerks	Technicians	IT professionals
Number of interviews	5	6	6	6	6	4	6

Table 1: Occupational communities of respondents for research on social representations of IS security.

During interviews (realized in winter 2004-5), I introduced the research as dealing with "IS security at this Hospital," without defining the terms "IS" or "security," in order to avoid biasing

respondents' responses according to my own representations. Part of the interviews aimed at exploring how respondents defined IS security in their own terms and what dimensions of their work environment they related to it.

Interviews were recorded, transcribed, and then coded in a grounded way [Glaser and Strauss, 1967, Strauss and Corbin, 1998]. The frequency of occurrence of the topics that appeared in respondents' discourse was then compared. The mean frequencies of topics occurrence was used as a proxy for the "*expressive value*" of concepts that are part of social representations [Abric, 2001, Pawlowski et al., 2004, Zanchetta et al., 2005]. The expressive value corresponds to the idea that concepts that are important in social representations will tend to appear more often in the discourse of respondents.

I now present some of the findings of this research, in order to illustrate some of the contributions that SR theory can make to the understanding of social representations as built from processes of anchoring and objectification.

At Eastern Hospital, there was no obvious way to distinguish between experts and laymen with regard to IS security. IT professionals and healthcare professionals could both claim insider's knowledge of IS security. For IT professionals, IS security was the security of computer systems and networks. An IT professional said, for instance:

"You have IS security when you have your computer to work its best."

In contrast, for members of communities involved in patient care (e.g., physicians and nurses), IS security was mostly a matter of securing the privacy of patient information. A nurse explained:

"I believe that [IS security is] to keep patient information private and to avoid breaches of confidentiality for data that we consider private."

These two communities anchored their representations of IS security to the respective object of their practice.

Moreover, "having a secure IS" became objectified as "being HIPAA compliant." A manager explained:

Interviewer: How would you define information system security in the context of this hospital?

Manager: We have to follow the HIPAA guidelines. We have to be in compliance with what Hospital has determined to be the HIPAA guidelines for us.

Respondents made sense of the abstract notion of IS security by relating it to a more tangible one, the fact that Eastern Hospital had recently had to become HIPAA compliant. What was interesting and somewhat surprising to me was that this objectification process was shared among the various occupational communities, for the HIPAA rule had been highly publicized at Eastern Hospital, and all employees had to apply the rules that enforced it. Objectification had thus created a minimal consensus among communities. On the other hand, the objectification process also bounded the knowledge regarding IS security that members of these communities felt they had to acquire as well as limited the accountability they felt with regard to IS security.

IMPLICATIONS FOR KM RESEARCH AND PRACTICE

I was interested in how SR theory can help conceptualize social knowledge as non-consensual and illustrated this idea with insights from a research on social representations of IS security in a healthcare organization. In what follows, I advance three implications for KM research and practice of non-consensual knowledge.

First, managing knowledge within and among communities also involves dealing with social representations. Their deeply embedded nature makes them often taken for granted, unquestioned, and untold [Jodelet, 1989]. It also involves that new knowledge may not be acquired and put into practice after a new system has been put in place if the using the new system would contradict existing representations [Schultze and Boland, 2000, Vaast and Walsham, 2005]. Managers should get a sense of how different stakeholders represent their work environment in order to design systems and initiatives that can actually foster learning and knowledge sharing.

Second, the polyphasic nature of social representations also involves taking into consideration the relationships among communities when developing a KM initiative. These relationships and, in particular, the balance of power among communities, are likely to influence the representations of the various communities as well as the dominating representation that may emerge within an organization. In this way, investigating how various occupational communities make sense of their world constitutes an instance of “dialogic” research in KM and IS [Schultze and Leidner, 2002].

Third, representations help make sense of new information and events, but they also limit the understanding. Representations are a way of seeing and not seeing. As new knowledge becomes part of people’s “library” of values and ideas through anchoring and objectification, this new knowledge also bounds the understanding of new events. In order to interpret objects in a new light, one may have to go beyond one’s representations, which points to the key dialectic between learning and unlearning. This idea of unlearning has been mentioned in the IS and KM literature [Schultze and Leidner, 2002], and it has long been noted in the strategic literature on organizational learning [Hedberg, 1981, Nystrom and Starbuck, 1984]. A substantial difference between the SR theory and the early organizational literature on organizational unlearning is that the latter considers the “perception bias” that prevents managers from seeing correctly the situation of their company. Should these biases be corrected, it is expected that the right knowledge and actions will be developed. In contrast, SR theory does not consider a mere opposition between “correct” and “incorrect” perceptions, but, rather, it is interested in the ways in which various communities make sense of their environments and interpret actions and events.

V. A STRUCTURAL APPROACH TO SOCIAL REPRESENTATIONS – SUZANNE PAWLOWSKI

One of the themes introduced previously in this paper is the compatibility and complementarity of SR concepts with key concepts in IS research, e.g., organizing vision [Swanson and Ramiller, 1997], technological frames of reference [Orlikowski and Gash, 1994]. In this section, I continue this theme by highlighting the conceptual compatibility of SR theory with the situated learning perspective [Lave and Wenger, 1991; Wenger, 1998]. As background to that discussion, I first introduce readers to a structural aspect of SR theory and give an example of an empirical method that can be used to capture and analyze the structure of social representations.

THE STRUCTURE OF REPRESENTATIONS

An elaboration of SR theory that provides a foundation for empirical studies is the work of Jean-Claude Abric related to the structure of a representation. A fundamental hypothesis of this work is that SR are seen as consisting of a *central core* and *peripheral elements*, with the central core giving structure and meaning to the representation [Abric, 1976]. The central core, or attitudinal component, is the most resistant to change - “It constitutes the most stable element of the representation, the one that ensures the perennial nature of the representation in moving and evolving contexts” [Abric, 2001: 44]. The peripheral elements provide the interface between the central core and the concrete situation within which the representation operates and is elaborated. One of the functions of peripheral elements is to act as a defense system, or ‘shock absorber,’ because they may change without disturbing the central core [Flament, 1994]. In this double system, “representations are at once stable and rigid, because they are determined by the central core which is profoundly crystallized in the value system shared by the members of a

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group. At the same time they are dynamic and fluid, because they integrate a wide variety of individual experiences with the social conditions that mark the evolution of the individuals or groups." [Philogene, 2001: 40-41]. Effective transformation of a representation is only possible if the central core itself is questioned [Moliner, 1992].

'MAPPING' SOCIAL REPRESENTATIONS

A variety of empirical methods have been developed to discover and identify the elements of social representations, focusing, in particular, on the elements that constitute the central core (see, e.g., Breakwell and Canter [1993], and Doise, et al. [1993] for descriptions of commonly-used methods). The first step in these methods is to elicit social representations from members of the social group(s) of interest. Examples of data sources/collection methods are free word association [Clemence, 2001], interviews [Farr and Moscovici, 1984], secondary cultural sources such as dictionaries and newspaper accounts [Lahlou, 2001] and other texts of group discourse such as meeting transcripts (e.g., McKinlay et al. [1993], Nicolini [1999]). Various analytic techniques can be used to analyze the data, based on the objective of the analysis and characteristics of the dataset (e.g., factor analysis, multidimensional scaling). One procedure specifically designed to elicit the underlying structure of social representations is a technique called 'analysis of similarity.' Originally introduced by Flament [1986], 'analysis of similarity' (analyse de similitude) has become a widely used technique to discover relationships among the elements of shared representations (e.g., Degenne and Verges [1973], Calafat et al. [1998]). Its fundamental assumption is that the relative position of elements within a representation is reflected in the degree of agreement that members of a group display with respect to these items. In other words, the more frequently items (topics, themes, and so on) are used together, the closer those items will be in the social representation. Agreement, therefore, is operationalized as co-occurrence of items across sources (e.g., interviews, meeting transcripts).

The first stage of the data analysis involves two steps. First, the source-by-attribute (data source-by-item) data matrix is transformed into an inter-attribute similarity (IAS) matrix, where each cell of the matrix contains a Jaccard's similarity coefficient, indicating a degree of co-occurrence (proximity) for a given pair of attributes [Hammond, 1993]. In step two of the procedure, significant relationships among the elements of the representation are identified by constructing the 'maximum tree' of the system based on the pair-wise similarity indexes from the IAS matrix. In the context of SR theory, Flament's [1986] 'maximum tree' seeks to single out those relationships among the elements that maximize the overall similarity within the representation. The output of the analysis, the similarity system, can then be represented graphically as an SR 'map' showing patterns of significant relationships among the set of elements. (An example of an SR map from a study of IT professionals' perceptions of job stress and burnout in IT [Pawlowski et al., 2004] is shown in Appendix A.)

The objective of the second stage of the analysis is to identify the elements that may be part of the central core of the social representation. Two of the three criteria that characterize elements belonging to the central core, expressive value and associative value, can be evaluated by examining the frequency of an element in the discourse and the degree of connectivity of an element within a representation [Abric, 2001]. The third, and primary, criterion for centrality - symbolic value (i.e., the generating function of the core through which elements acquire meaning) - requires additional steps (e.g., surveys, experiments). Analysis of similarity, however, gives preliminary evidence of elements constituting the core of the representation, providing a starting point for follow-on studies. For example, three concepts shown in Figure 1 that the analysis points to as central to IT professionals' understanding of burnout are: (T1) working long hours over an extended period of time/heavy workload; (T10) emotional strain/negative emotions; and (T16) negative impacts on job performance.

While I have only given a high level description of the analysis of similarity technique in this paper, interested readers can find more detailed descriptions in studies applying this method such as Pawlowski, et al. [2004], Nicolini [1999], and Doise et al. [1993].

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APPLICATION OF THE STRUCTURAL APPROACH - KNOWLEDGE AND LEARNING IN ORGANIZATIONS

SR theory and methods offer several fruitful avenues for extending our understandings of knowledge and learning in organizations. In this section, I describe how the basic assumptions of SR theory align well with theories of situated learning [Brown and Duguid, 1991; Lave and Wenger, 1991; Wenger, 1998] and show how the structural approach, in particular, could be used in empirical studies using this perspective.

While SR theory focuses on discourse within a social group, and situated learning focuses on work practice (including discourse), these theories share several fundamental ideas in common. Perhaps foremost is the non-consensual view of knowledge. The idea of the emergence of shared meanings and perspectives on social reality within a social group articulated in SR theory is consistent with the negotiation of meaning and development of shared understandings within a community of practice [Wenger, 1998]. Moreover, the concepts of objectification (the process of transforming abstract information into concrete knowledge through communication [Flick, 1995]) and reification ("giving form to our experience by producing objects that congeal this experience into "thingness" [Wenger, 1998: 58] bear similarities. Lastly, both theories emphasize the dynamic and fluid nature of SR and shared knowledge.

The high degree of correspondence at a conceptual level between the two theories suggests that the use of SR theory and methods can be productive in elaborating situated learning theory and furthering our understandings of knowledge and learning in organizations. Three areas where a social representations approach has the potential to yield more micro-level views of key concepts and process dynamics are: 1) boundary objects, 2) knowledge brokering/translation, and 3) knowledge transformation.

A boundary object is any object that is relevant to the practices of multiple communities (artifacts, documents, terms, and so on) but is used or viewed differently by each of them [Brown and Duguid, 1998; Wenger, 1998]. A fundamental quality of boundary objects that facilitates sharing and coordination is their interpretive flexibility, which allows for multiple interpretations and uses by the multiple parties employing them – boundary objects are "plastic enough to adapt to local needs and constraints of the several parties that employment them, yet robust enough to maintain a common identity across sites" [Star and Griesemer, 1989: 393]. Here, the methods of a structural approach to social representations could be used to elicit the elements and structure of the social representation of a boundary object by different communities of practice to deepen our understandings of how boundary objects 'work' – e.g., Are there core elements of the representations that are shared across communities and peripheral elements that are context-dependent?

In situated learning theory, brokers are defined as "...individuals who provide connections between communities of practice, transfer elements of one practice into another, enable coordination, and through these activities can create new opportunities for learning" [Wenger, 1998: 109]. Brown and Duguid [1998] used the term "knowledge broker" to describe people who participated in multiple communities and facilitated the transfer of knowledge among them. One of the processes engaged in by knowledge brokers is translation, framing the element of one community's world view in terms of another community's world view. For local knowledge to become comprehensible to another community of knowing, its meaning must be translated or transformed [Boland and Tenkasi, 1995; Bechky, 2003]. Again, social representation theory and methods could be used to gain a deeper understanding of the processes of translation – e.g., What elements of a social representation are 'translated' in the brokering process? Do the social representations of members of a boundary spanner (broker) community of practice [Levina and Vaast, 2005] differ from the social representations of the communities they connect?

Lastly, another area where SR theory could enable more micro-level examination of processes and outcomes is knowledge transformation. "Creative abrasion" is the term used by Leonard-Barton [1995] to describe the opportunities for knowledge creation that can arise when different

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perspectives are brought into juxtaposition. In a similar vein, Carlile [2002] points to the need for current knowledge (knowledge that is localized, embedded, and invested in practice) to be transformed in order to effectively share and assess knowledge across functional boundaries in organizations. Our current understandings of these transformation processes, however, are very limited. Using SR theory and methods to identify and analyze the representations of knowledge within organizational groups (functional divisions, communities of practice, and so on) and at the boundaries of these groups where these representations "meet" has the potential to enhance our understandings of the transformation process.

VI. THE RELEVANCE OF SR THEORY FOR KM RESEARCH AND PRACTICE – RICHARD BOLAND

The previous sections have highlighted specific aspects of SR theory that can illuminate KM research and practice. This section links these aspects to one another in order to emphasize why we believe that KM research and practice could benefit from investigating further the concept of social representations.

SR theory is well suited for the current turn of KM research to consider more seriously the old idea that knowledge is a social and inter-subjective construction [Berger and Luckmann, 1966; Weick, 1969]. Ulrike suggested an intriguing implication of this idea. She showed how, as we moved from one generation of KMS to another one, the knowledge that was managed also changed. Expert systems symbolized a vision of knowledge as coming from experts only. In contrast, today's recommender systems could be viewed as the triumph of common knowledge. Recommendations are based on the knowledge that comes from everyone who shares similar tastes and behavioral patterns. Should these patterns change, knowledge also changes.

Elizabeth illustrated more closely the dynamics of representing. She discussed the role of discursive dynamics and electronic communications in the emergence of knowledge and representations. Her segment also pointed out the importance of individuals or "active minorities" who actively contribute to the emergence of these representations. Finally, Elizabeth vividly illustrated the emerging role of blogging in the sharing and building of knowledge. We can anticipate that KM practice is likely to shift from implementation of all-encompassing KMS to more fluid systems relying upon the intense participation of key individuals. These individuals who constitute active minorities influence the communities to which they belong, as well as the ones against which they act and react.

Knowledge and learning are thus highly dependent on the representations of the many communities that emerge in social spheres. Emmanuelle's segment emphasized the implications of a very familiar claim in the KM field, that knowledge is social. Considering that knowledge depends on the different communities we belong to, and that members of different communities do not interpret the same events or objects in the same way, has consequences for intra- and inter-community communication and knowledge sharing, as well as on the dynamics of learning within and among communities.

Finally, Suzanne's segment offered methodological and conceptual guidance to help better explore the social representations of various communities. Suzanne offered a sound illustration of some of the methodological tools that a structural approach to social representations offers and that can be especially useful to KM researchers. These tools do not create a once-and-for-all map of knowledge. Rather, investigating the structure of representations suggests subtle differences in the status of what we know. For instance, central elements of social representations would be more difficult to change than more peripheral ones. In addition to offering key practical guidelines on how to identify empirically the core and periphery of representations, Suzanne also suggested interesting areas for future research by emphasizing the conceptual parallels between a structural approach to social representations and key tenets of situated learning theory.

VII. DISCUSSION WITH THE PANEL AUDIENCE

Question 1: How can we articulate the notion of sensemaking with the concept of social representations?

Emmanuelle: The two notions are not contradictory with each other. Research on social representations is interested in both the process of representing and in the actual representations. In contrast, the notion of sensemaking seems to be mostly interested in the process of representing. Also, social representations are interested in the social level of the community, whereas the sensemaking seems more related to the individual, particularly managers within organizations.

Elizabeth: Representations are important to the sensemaking process. In a way, they shape the sensemaking process and influence the formation of attitudes and opinions by providing the cognitive categories and language utilized in sensemaking.

Suzanne: For instance, Dan Robey and I investigated the development of a shared environmental information system in a manufacturing company. We observed that IT professionals were engaged in a translation process. In a way, they had to deal with differences in representations within the different organizational groups using the system – in this case engineers, lobbyists/lawyers and internal auditors. Creating a shared system involved understanding those different representations and differences in user sensemaking related to the system.

Question 2: I failed to see the true contribution of SR theory to KM research. What is new with this SR theory? Also, aren't we losing some things by referring to this perspective? Aren't we losing some contributions from theories that emphasize action, practice, and knowing?

Elizabeth: Moscovici began working on the concept of social representations in the 1960's, inspiring other social psychologists, primarily in Europe, to work in this area. The idea of knowledge as socially constructed may not seem new to many of us, because we are familiar with the similar, and parallel, intellectual developments stemming from Berger and Luckmann's work on social construction of reality. However, research on social representations helped advance these idea forty years ago and, still today, we can learn from it.

Also, social representations theory is not incompatible with other approaches. We do not advocate replacing other concepts in use by social representations. Rather, it may be interesting to investigate what the notion of social representations can bring us and compare it to other concepts.

Emmanuelle: Yes, also, the notion of social representations does not necessarily mean a step back from the practice perspective. Social representation researchers are interested in the dialectic between representing and the represented. They also emphasize that what we do and what we think are highly inter-related. See for instance Abric [1994b] for examples of research on the relationships between social representations and practice. Even Bourdieu's notion of habitus seems to incorporate some dimensions of social representations. Instead of considering the two theoretical traditions as mutually exclusive, KM research could benefit from investigating their points of consistency and of disagreement.

Question 3: What would you say about the relationship between organizational learning and social representations? How do you relate the concept of social representations with other concepts of the KM literature?

Ulrike: For KM as a practice, among practitioners, the rhetoric around KM is stronger than the one around organizational learning. So, to me, organizational learning does not appear to be as much of an organizing vision as KM is, most probably because there is not a particular technology associated with organizational learning. However, in IS research, we are frequently interested in learning processes, in these dynamics of learning.

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Elizabeth: What is of relevance here is the dynamic relationship between the object and subject. We consider learning as a verb, to actively create new knowledge. The KM literature uses a lot of concepts, with slightly different flavors. With the social representations concept, the idea is not to create knowledge, but, rather, to create common ground about certain phenomena. Hence, learning and social representations are related, but the concept of social representations has a slightly different flavor than that of learning.

Regarding the relationship between social representations and organizing vision, there is also clearly overlap, but organizing visions are related to technology innovation, whereas social representation is a more general theoretic concept.

Suzanne: Also, as I mentioned in my segment, we can advance some parallels between a structural approach to social representations and situated learning theory.

Question 4: What about generating knowledge and social representations in distributed and especially ubiquitous computing environments? What can technology do about this?

Ulrike: I am not sure what KM in ubiquitous environments will look like, but I would like to draw on Elizabeth's discussion about blogs. Blogs are examples of situated knowledge being captured right now, and they may become a big part of how we think about KM in a less reified way. To me, blogs are a "let many flowers bloom" approach to KM. So, from an organizational perspective, it may seem surprising that so many people voluntarily write, tag, and read blogs.

Elizabeth: Also, Moscovici is interested in the relationship between language and representations. See, for instance, the notion of objectification, of creating images, metaphorical images. However, today, with current imaging technologies, these images may not have to be metaphorical anymore. We can think of actual images, technologies that allow us to move beyond the written, beyond the language metaphor to actual pictures. For instance, as we heard in an earlier paper presentation at the conference, one may create a picture of stocks as stars, with high performing stocks as the brightest stars as a way to visualize the concept and the data. (See presentation at the 2005 ICIS conference in Las Vegas, from a paper by Brioni Oates, on *Computer art*.)

Richard: We can certainly link these two last questions, about learning and IT development. Learning takes place in a set of social representations. It is possible to stimulate new organizational learning by allowing for the formation of new social representations. Hence, new graphical tools help generate new modes of representations.

Fred Collopy has been developing an instrument to "play" visual images, such as musical instruments play music. His "Imager" plays images with tempos, rhythms, variations...

Question 5: In the Academic field, shouldn't we reexamine our own social representations? Ulrike rightly noted that KM is but a dead term; it has lost its relevance for practitioners.

Elizabeth: As academics, we are active minorities; we help create new ideas, new representations through our teaching, our publications, our presentations. So yes, it is valid to say that we should consider our own representations, and to critically look at the representations that exist in our field. That is, we have to be relevant, but we should not succumb to the latest consulting fads and buzzwords.

Ulrike: Also, to be perceived as more relevant, perhaps we should be more specific. Getting away from the grand labels such as "KM," and describing what our research is really about in more granular term, such as decision making or the efficacy of graphical vs. textual representation in learning. We are working with moving objects. We should aim toward clarity around what it is that we study.

Richard: It is interesting that this question makes us consider our own social representations as we are talking about social representations. The reflexivity is quite ironic.

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Many of us are working in business schools. In business schools, we do tend to consider social representations as solid objects instead of social constructions that reflect just one of many different possibilities. Hence the idea of the MBA as the GM of education!

This tells us to think reflexively of our own representations, in order to avoid marginalizing ourselves.

Question 6: Still, I do not see the contribution of social representations. To me, it seems more like a 20-year step back from what a focus on practice and structuration brought us.

Richard: Nicely said! Yet, we should not overly resist the introduction of new concepts or theories. I resisted this idea of social representations for two years, but now I accept that it provides a way to see the world that adds to our current knowledge. The idea is not to replace "practice" and "structuration" with representations. These notions are not inconsistent with one another. Rather, the purpose of this panel was to get KM researchers interested in the idea of social representations and see where it can lead us. In this panel, we did not intend to say that social representations should replace all the concepts that we already have to understand knowledge and knowledge management, but that investigating social representations can bring new insights that are worth pursuing.

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APPENDIX A – Example SR Map

Social Representation Map of Burnout in IT Professionals
(from Pawlowski, Kaganer and Cater, 2004)

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