Welcome to the third issue of the *International Journal of Knowledge Management*. In this issue we present two research articles exploring the characteristics and success factors for a knowledge management (KM) community of practice and an interview approach to capturing tacit knowledge. Additionally, a case study of a Hong Kong organization that failed in its KM initiative and an analysis of trends and gaps in KM published research is also presented. Finally, this editorial issues a call for research and outlines an approach for this research to further define the concept of knowledge.

**INTRODUCTION**

KM practice continues to mature and KM research continues to improve in both depth and applicability. Managers and professionals in practice are moving away from near-sole reliance upon technological artifacts such as databases, document repositories and Web portals, and recognizing the importance of people, organization, communication, trust and motivation. Edwards et al. (2003) contrast this in terms of “hard” vs. “soft” KM issues. Researchers in industry and academia are finally distinguishing between knowledge and information, examining the context of KM, and considering dynamic aspects of knowledge as it flows. The maturation of practice and improvement in research reflect healthy progress of KM as it struggles to separate from information systems research—which has tried vigilantly to usurp the management of *knowledge* as some variation on managing *information*—and for concomitant emergence as a stable and fruitful field of its own (Jennex & Croasdell, 2005).

But the KM field as a whole continues to struggle in terms of how it treats the concept of *knowledge*. In particular, researchers and practitioners alike refer broadly to knowledge as a single, monolithic concept. For instance: many otherwise sophisticated and technologically savvy knowledge managers still mistake knowledge as information technologies used for support (e.g., “it’s in the database”); many well-compensated KM consultants still fail to distinguish between tacit and explicit knowledge (e.g., “capture the experience”); many otherwise informed KM researchers still conflate individual and organizational level knowledge (“the team learned a lesson”); and even the most thoughtful KM scholars still struggle to characterize knowledge beyond simple, binary contrasts (e.g., explicit/tacit, declarative/pro-
cedural, know-what/know-how). It makes little sense to assert that tacit knowledge created by a specific individual, for instance, will behave anything like explicit knowledge shared between organizations, as a contrasting instance. Yet such assertions are widespread and implicit in the bulk of KM research and practice today. Moreover, in very practical terms, failure to differentiate knowledge is analogous to treating all forms of transportation (e.g., pedestrian, automobile, boat, airplane, teleportation) singly. Clearly, walking, sailing or flying to China from the U.S. represents qualitatively different behaviors with very different performance characteristics (e.g., in terms of cost, time), but each is part of the concept *transportation*.

We are calling for increased sensitivity and attention to the multidimensional nature of knowledge. This call is not new. For instance, the ancient Greeks maintained differentiated knowledge concepts (see Kane, 2003); 20th century economists measured more than a dozen kinds of knowledge (see Machlup, 1980); and some contemporary researchers are beginning to utilize two-dimensional conceptualizations to characterize knowledge flows and contingency effects (see Nonaka, 1994; Inkpen & Dinur, 1998). But this call is timely, as KM emerges from fad to necessity in practice, and as it transitions from conceptualization to application in research. This call also underpins our ever-clearer realization that KM research and practice face a very real and dangerous risk of stagnation if the many different kinds and behaviors of knowledge cannot be separated out and accounted for.

To overcome such risk, KM practice needs to learn how to manage appropriately—and differently—the many different kinds of knowledge and which of numerous alternate technologies, organizations and processes fit best the enterprise mission and context at hand. And KM research needs to sharpen its theoretical frameworks and empirical instruments to interrelate the myriad different states of knowledge and modes of behavior with their differentiated effects on work, people and performance, particularly where technology is intended to play an important role. This requires a renewed research thrust into understanding the multidimensional nature of knowledge. In this editorial we argue for development of new empirical instruments to detect and measure the various dimensions of knowledge. And we build upon recent work on multidimensional knowledge flows to provide a possible starting point for such research.

**ANALYTICAL FRAMEWORK**

The first step is to develop an analytical framework to articulate and interrelate the key dimensions of knowledge. In particular, we look for dimensions that are rooted firmly in KM literature and that offer potential to support the development of empirical measurement scales. Clearly, many theoretical concepts, from a diversity of perspectives in disparate literatures, represent candidates for use in developing such an analytical framework. Indeed, the plethora of diverse, non-integrated concepts and perspectives makes it difficult to compose an integrated, parsimonious framework. To address such difficulty, we build upon prior theoretical research that focuses specifically on modeling and visualizing dynamic knowledge (Nissen, 2002).

This prior research draws from diverse, dynamic knowledge perspectives and proposes a framework to integrate them through four dimensions: *explicitness, reach, lifecycle, and flow time*. Although this prior research remains largely theoretical, each of its four constituent dimensions has some empirical basis reported in the literature. This facilitates our task of operationalizing the corresponding concepts to develop empirical
instruments for use in the field. Moreover, this analytical framework has been applied to describe numerous different organizations and processes (e.g., see Nissen, 2005; Nissen & Levitt, 2004; Snider & Nissen, 2003).

The first dimension, explicitness, addresses the type of knowledge. The existence and importance of different knowledge types is noted repeatedly in several literatures (Nonaka, 1994; Postrel, 2002; Saviotti, 1998; Spender, 1996), and the distinction between explicit and tacit knowledge (Polanyi, 1967) is particularly compelling. It cleaves knowledge into one explicit class that is supported well by information systems and a tacit class that is not (Nissen et al., 2000). We may be able to operationalize this construct as the ability to articulate knowledge: from theory we would expect that explicit knowledge could be articulated readily, whereas tacit knowledge could not. From theory we would expect also for explicitness to represent a continuum of knowledge, perhaps with tacit and explicit knowledge as endpoints.

The second dimension, reach, addresses the level of social aggregation associated with knowledge. The importance of theory that can cross different levels of analysis is emphasized repeatedly in the organization studies literature (Scott, 2003). Moreover, such levels of social aggregation are interrelated with various types of knowledge by several researchers (Crossan et al., 1999) and shown to reveal expressive patterns for visualization (Nonaka & Takeuchi, 1995) and contingency development (Inkpen & Dinur, 1998). We may be able to operationalize this construct as the level of social aggregation in the enterprise: from theory we would expect that different types of knowledge would occur at varying levels of social aggregation. From theory we might expect also for reach to represent a continuum of knowledge, perhaps with intermediate aggregation levels such as individual, group, organization, and inter-organization.

The third dimension, life cycle, addresses the activities associated with knowledge. We note a variety of activities in the literature, ranging from knowledge creation and conversion, through sharing and application, to reuse and forgetting. We note also how several life cycle models incorporate these various perspectives into a process view (see Nissen et al. 2000). Through work to conceptualize the dynamics of knowledge flows (Nissen 2002), the dimension life cycle has further been integrated with both explicitness and reach and shown to enable novel visualization of diverse dynamic knowledge patterns such as “spirals” (Nonaka, 1994, p. 20) and others. We may be able to operationalize this construct as the activity associated with knowledge: from theory we would expect that different types of knowledge, across multiple levels of organizational reach, would involve varying activities of a life cycle process. From theory we might expect also for the life cycle to represent a continuum of knowledge, perhaps with intermediate aggregation levels such as knowledge creation, sharing, and application.

The fourth dimension, flow time, addresses explicitly the dynamic nature of knowledge, and it enables dynamic knowledge to be conceptualized directly. Incorporating explicitly this temporal dimension departs substantially from the theoretical models summarized above. It makes explicit the dynamic nature of knowledge, and it may support empirical measurement of such dynamics. Through the prior research noted above, the dimension flow time has been integrated further with all three of the others (i.e., explicitness, reach, life cycle) and shown to enable multidimensional visualization of diverse, dynamic knowledge patterns (Nissen 2002). We may be able to operationalize this construct as the length of time required for knowledge to flow: from theory we would expect that different types of knowledge, across multiple levels of so-
cial aggregation, and associated with varying knowledge activities, would flow at different rates. From theory we would expect also for flow time to represent a continuum of knowledge, perhaps with relative orders of magnitude (e.g., days, months, years) to distinguish between various knowledge flows.

DEVELOPING AN INSTRUMENT

The next step is to operationalize the four dimensions outlined and to create empirical instruments that can be taken into the field to measure knowledge in practice. The development of empirical instruments represents an important aspect of research the physical and social sciences alike. Many scholarly articles and practical textbooks have been written on the subject and many useful instruments have been developed over time. The KM field needs researchers and practitioners alike to cooperate on the development of one or more instruments to measure knowledge multi-dimensionally. Researchers need to ensure the resulting scales possess characteristics of good validity and can be applied empirically in the field. Practitioners need to ensure the resulting scales measure aspects of knowledge that are important to managers and for organizational performance. It is not the place of an editorial article such as this to specify how such scales should be developed, nor to develop them. Rather, we repeat here our call for action to treat knowledge as a multidimensional concept and to develop empirical scales for multidimensional measurement.

However, we do wish to point to efforts to do this research. The Hawaii International Conference on System Sciences (HICSS) KM track has a mini-track devoted to the philosophical and theoretical foundations of KM. We encourage researchers taking up our call for action to join this community of researchers. Additionally, we are proposing a KM foundations workshop to be held at the 2006 HICSS conference. This workshop hopes to unite researchers working on defining key KM concepts in a common and consensus effort to define these basic concepts and to issue a joint publication. Finally, we would also like to point out that success in research to develop and apply multidimensional knowledge scales will likely merit responsive publication in this and other KM journals.

REFERENCES


Mark Nissen is associate professor of information science & management at the Naval Postgraduate School. His research focuses on knowledge dynamics. He approaches technology, work and organizations as an integrated design problem. Recent research has focused on the phenomenology of knowledge flows. Mark’s publications span knowledge management, information systems, project management, organization studies and related fields. In 2000 he received the Menneken Faculty Award for Excellence in Scientific Research, the top research award available to faculty at the Naval Postgraduate School. In 2001 he received a prestigious Young Investigator Grant Award from the Office of Naval Research. In 2002-2003 he spent his sabbatical year in the Stanford Engineering School. In 2004 he founded the Center for Edge Power at the Naval Postgraduate School. He serves currently as regional editor (Americas) for the journal Knowledge Management Research & Practice and participates on the boards of multiple scholarly journals. Before his information systems doctoral work at the University of Southern California, he acquired over a dozen years’ management experience in the aerospace and electronics industries.

Murray E. Jennex is an assistant professor at San Diego State University and president of the Foundation for Knowledge Management (LLC). Dr. Jennex specializes in knowledge management, system analysis & design, IS security, and organizational effectiveness; and is editor-in-chief of the International Journal of Knowledge Management. He has managed projects in applied engineering and business and information systems development and implementation. His industrial and consulting experience includes nuclear generation, electrical utilities, communications, health services, and governmental agencies. Dr. Jennex is the author of numerous publications on knowledge management, end user computing, international information systems, organizational memory systems, and software outsourcing. He holds a BA in chemistry and physics from William Jewell College, an MBA and MS in software engineering from the National University, and an MS in telecommunications management and a PhD in information systems from Claremont Graduate University. Dr. Jennex is also a registered professional mechanical engineer in the state of California.