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Culture: An Overlooked Key to Unlocking Organizational Knowledge

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“Once people have learned to learn in a given way it is extremely difficult to learn in any other way ...culture reflects the way one learns” (Hall 1990, 47).

Abstract

In the knowledge-based view of the firm, knowledge is a potentially strategic asset and should be managed as any other asset. A global organization comprising members from multiple cultures and ethnic groups has a potential asset in the knowledge of these different members, yet prior knowledge management approaches have ignored the cultural dimension of knowledge. Unlocking the asset represented by the cultural differences in an organization requires an understanding of the cultural basis of learning and knowledge. Recent research on the early development of the brain suggests a strong connection between how one learns and one's early cultural environment, suggesting the need for rethinking the knowledge management effort. This chapter outlines the recursive relationship between learning and knowledge, reviews recent research on the cultural foundations of learning and knowledge, and proposes a model of boundary spanning which can help global organizations meet the challenge of unlocking the knowledge represented by the different cultural and ethnic backgrounds of their members.

BACKGROUND

This chapter addresses the issue of culture and ethnic background as dimensions of knowledge management and the learning organization. The discussion that follows stipulates that the twenty-first century business and economic environment is increasingly global and that an organization's knowledge has become a strategic asset (Grant 1996). Learning, if not the only sustainable competitive advantage (Stata 1989), as a minimum can be considered to be one of the most important factors in competitiveness. Consequently, organizations have considerable motivation to manage their knowledge asset effectively and to use this asset as the basis for further learning. Toward this goal, many organizations have established systems of knowledge management. The interest in knowledge management, as indicated by the number of research articles on the subject, does not seem to follow the kind of increase, peak, and decrease pattern that has been observed in other management fads (Ponzi and Koenig 2002).

Most knowledge management systems (KMSs) have the explicit or implicit goal of enabling the organization to have access to all relevant available knowledge (Alavi and Leidner 2001). However, a review of published reports of knowledge management systems indicates that

organizational members' cultural and ethnic backgrounds are not considered in the design and operation of most KMSs, which take a Western (and mostly North American) approach (Mason 2003). This means that knowledge management systems as currently envisioned and designed have a significant cultural gap that can lead to underutilizing some of the organization's knowledge assets—those assets represented and embedded in the persons who are not from mainstream Western cultures. The systems as currently designed may unwittingly place barriers to knowledge access by those from non-Western cultures, and the knowledge of organizational members who are not from Western cultures may not be captured or communicated by the KMS. For example, as organizations become more global and comprise members who have distinct national and ethnic backgrounds, the organization could use these members' knowledge to help tailor the organization's sales and marketing efforts to meet the preferences of the distinct groups from which these members came.

Bridging this cultural gap in KMS design requires an understanding of the recursive relationship between learning and knowledge, the significance of the tacit dimension of knowledge in this relationship and in knowledge transfer, and how differences in cultural and ethnic backgrounds affect knowledge and learning. To develop this understanding, the chapter posits the following:

- Individual learning is a necessary (but possibly not sufficient) process for organizational learning and knowledge retention.
- The relationship between knowledge and learning is recursive; each affects the other.
- In this learning-knowledge relationship, the tacit dimension of knowledge performs a critical role.
- The early cultural environment of an individual affects how the individual learns; if one is to learn in a different way after childhood, external intervention may be required.

These propositions provide a foundation on which we might develop a set of principles that can guide the design of a culture-sensitive KMS. The discussion below summarizes the principles as postulates, which can be further examined through a model of boundary spanning at the syntactic, semantic, and pragmatic levels. The paper concludes with a discussion of the implications of the postulates and a model for the design of KMSs that might enable learning across and among multiple cultures.

DATA, INFORMATION, KNOWLEDGE, AND LEARNING

This section develops the above propositions in more detail and provides the foundation for the model of boundary spanning outlined in the subsequent section. Although the following discussion may discuss individual and social aspects of learning and knowledge separately, the integration of both perspectives is necessary for a full understanding of the interrelationships among knowledge, learning, and culture.

Individual and Organizational Learning and Knowledge

Learning occurs when an entity has interpreted information in a way that enables the entity to change the range of behaviors that it may consider (Huber 1991). Note that in this viewpoint,

learning can either enlarge the range of options (the entity sees new possibilities) or narrow the range of options (the entity can eliminate some actions from further consideration).

Some researchers have argued that when an individual in an organization learns, the organization itself has learned (Huber 1991). Although one might debate this strong statement, as it equates individual learning with organizational learning without considering the need either for applying the individual's learning or for communicating this learning to others, this position does emphasize that an individual—not an organization—is central to the process of learning. Organizational learning occurs as individuals in that organization make sense of data and information and apply their interpretation to the vision, strategy, standards, procedures, and operational activities that are communicated and implemented throughout the organization. As a consequence, we posit that individual learning is necessary for an organization to learn, but this may be an insufficient condition: the individual may need to act on this learning through communication with others, design and implementation of strategies or tactics, or the implementation principles that embed the new knowledge into organizational procedures.

The communication of individual learning to others in the organization is also necessary for the organization to mobilize around its goals and strategy for pursuing these goals. Such communication is perhaps more challenging for Western organizations than Japanese or other Eastern organizations. In the latter, learning experiences and the sharing of knowledge are more integrated into the organizational routine (Nonaka and Takeuchi 1995).

The Nature of Data, Information, Knowledge, and Learning

The conceptualization of knowledge, long discussed by philosophers, has enjoyed renewed interest since researchers have taken seriously the resource based view of the firm (Penrose 1959; Barney 1996; Barney et al. 2001) and have recently proposed that knowledge is a key resource for the firm (Grant 1996). The traditional view of knowledge is that it fits into a hierarchical model: knowledge is at the top of a pyramid whose middle layer is information and whose lowest level is comprised of data. In this model, knowledge is an accumulation of interpreted and organized information (Davenport and Prusak 1998), and information comes from data within a context. One generally imagines a flow to this hierarchy, with 'raw' data that are arranged in ways that are meaningful in order to produce information, and then this information is consolidated into coherent frameworks to form knowledge. In this view, generally taken as typical (Alavi and Leidner 2001), data are precursors, or building blocks, of information and information is the source for knowledge. In this model, learning is the process by which the entity increases its awareness of context, creates meaning, and thereby is able to transform new information and experiences into knowledge.

This model is consistent with the notion that a KMS is intended to support four steps of knowledge management: knowledge creation, knowledge storage and access, knowledge transfer, and knowledge application (Alavi and Leidner 2001).

This model has been recognized as limiting and incomplete. Without some prior knowledge—knowledge that enables one to direct one's attention to what is salient—one is unable to distinguish 'data' from 'noise.' This suggests a reverse hierarchy, one in which knowledge is required to interpret data and create information (Tuomi 1999). Such a reverse hierarchical model emphasizes that an entity does not simply begin with an empty store of

knowledge and build up a knowledge base, but rather it starts with a foundation of prior knowledge.

Perhaps the most meaningful conceptual framework within which to view the relationships among learning, knowledge, information, and data is to visualize a hermeneutic, recursive process in which each is enriched and made meaningful by a consideration of the others. Discerning data from noise necessitates a prior knowledge framework that anticipates possible signals. Given such a framework, data can be interpreted to create meaning and resolve questions (information) and thus the entity learns. Information is the basis of communication between and among entities who can agree on interpretations and abstract concepts that can be the basis for new knowledge, which in turn can help recognize and interpret new data. At the same time, multiple schemas may be applied to develop alternative interpretations of data, providing for the construction of different meanings. One learns by using prior experience to continually select and sort signals from the environment, interpreting these signals (data) so that the new information can be incorporated in a way that enables the entity to ‘make sense of’ both prior knowledge and new information.

In considering this recursive model, the purposes of an organizational KMS have been articulated as contributing to three critical organizational processes (Choo 1998):

- Sense making (understanding and interpreting data about the environment)
- New knowledge creation (thus improving all organizational processes)
- Decision making (applying the knowledge to affect the environment).

Systems of knowledge management for a particular organization may focus on one or more of these goals. However, the recursive nature of data, information, and knowledge demonstrates the inadequacy of simple models that would create knowledge from information and information from data. This recursive aspect also suggests multiple roles for a KMS and suggests that an effective KMS enables both individual and organizational learning through the creation of meaning and significance from the interactions of (prior) knowledge schema, (new) data, and (flows of) information.

This viewpoint emphasizes the internal processes of organizational sense making and knowledge creation. In addition to the internal processes, the organization is engaged in a recursive information exchange with its environment. This exchange also affects the organization’s sense making, particularly helping the organization to understand the external values within which it is operating.

This discussion suggests that knowledge can be viewed in two ways, and neither is adequate by itself. Knowledge can be viewed as a store of accumulated and interpreted information, but it also can be viewed as a social process by which individuals and organizations continually apprehend and make sense of information based on prior knowledge. The recursive aspect of knowledge and learning means that the stored knowledge affects how the individual (entity) screens and interprets flows of information. Learning—the process of understanding, interpreting, and representing new information and new experiences so that this stored knowledge can be changed or reinforced—is thus affected by the existing knowledge.

This suggests an initial postulate on which we might build a framework for a culturally sensitive KMS:

P1: An effective KMS not only enables an organization to store knowledge, it enables flows of data and information among its members and supports them in interpreting and representing

these data and information and thus enables them to create new knowledge by considering multiple interpretations of new data using alternative schema.

Dimensions of Knowledge: Explicit and Tacit

Today, the concepts of tacit and explicit have been explored in much of the writing about knowledge management and knowledge creation. Discussing and communicating about the explicit dimension is straightforward and there is little controversy about it. The explicit dimension of knowledge is expressed in words and can be communicated to others using language, diagrams, or other tangible artifacts. Consequently, the information technology infrastructure of a KMS will typically have a 'knowledge base' containing text, tables, models, and other information that can be expressed explicitly.

However, much of what has been written with respect to the tacit dimension has misunderstood and misinterpreted Polanyi's phrase, "we know more than we can tell" (Polanyi 1967, 4). Particularly, many have interpreted this to mean that knowledge is of two types: tacit and explicit. In taking this approach, some of the more popular writers on knowledge management have suggested transformations from one type to another (Nonaka and Takeuchi 1995; von Krogh et al. 2000). However, Polanyi was clear in his view that all knowledge comprises a tacit dimension; he does not discuss a tacit type of knowledge, only a dimension of knowledge that one is unable to articulate. Nonetheless, the notion of two types of knowledge is widespread and underlies much of the literature on knowledge management. A recent review of several dozen papers indicates that about 90% of them refer to two types of knowledge (Keane and Mason 2006). This emphasis on types rather than dimensions means that the holistic and integrated aspect of knowledge has not been studied sufficiently. It is no surprise that those who construct KMSs, without a research foundation on which to build, have inadequately accounted for the tacit dimension in their designs.

The tacit dimension may represent physical skills, such as riding a bicycle, but it also reflects concepts of values and facts that are commonly known (sometimes referred to as 'common sense') to a society or group. These commonly known values and facts are socially constructed and transmitted, as through apprenticeships (learning from a few masters) and through the broader cultural environment. The cultural environment, whether national or ethnic, contributes to an individual's tacit dimension of knowledge and aspects of this dimension and may be difficult to change (Hall 1990).

If one considers that one objective of a KMS is to enable individuals to have access to the widest range of available knowledge, it should provide for access to the tacit as well as the explicit dimension of knowledge. This leads to our next postulate:

P2: For a KMS to be effective across multiple cultures, it should recognize both dimensions of knowledge and enable access and transfer of the entirety of knowledge held by the organization's members.

CULTURE AND LEARNING

Culture has been defined as "the system of shared beliefs, values, customs, behaviors, and artifacts that the members of society use to cope with their world and with one another, and that are transmitted from generation to generation through learning" (Bates and Plog 1990, 7).

Culture is both individual (it is manifested as individual traits that are learned) and collective (it emerges over time from the shaping of behavior and practices through the combined efforts of a society).

The importance of culture to learning can hardly be overstated. This chapter opened with the quote from Hall (1990, 47) on the relationship between learning and culture: “once people have learned to learn in a given way it is extremely difficult to learn in any other way . . . culture reflects the way one learns.” Vygotsky and others (1987) proposed that learning can best be understood by taking an explicit culture-centered approach. Others have agreed with this perspective and developed the culture-centered approach further (Forman et al. 1993; Kozulin 1998). This perspective posits that culture (the collective) is a source of differences in cognition as (individual) cognitive processes are formed through sociocultural activities. Cole (1971) and others developed a contextual theory of cognitive functions, which posits that different cultures have different systems of mediated learning experiences (MLEs). Such systems and the resulting MLEs are important to cognitive development, thus leading to differences that become evident when a learner makes a transition from one system to another.

A recent book focuses on the different cognitive processes between ‘Asian’ thought and ‘Western’ thought (Nisbett 2003). The book is filled with examples of how Asians and Westerners ‘think differently.’ For example, when asked about themselves, Asians see themselves as part of a group and Westerners see themselves as individuals. Similarly, when viewing a picture of an object in the physical environment, Asians see the object in context and in relationship to the environment; Westerners perceive it more as a separate object and do not refer to the context in describing it.

Nisbett outlines a conceptual model of how meaning is constructed by someone who has grown up in a particular culture. In this model, social structure (e.g., family and family relationships) is an antecedent to attention processes, metaphysics (including ‘folk metaphysics,’ and epistemology (2003, p. 33). In other words, according to this model, the social structure in which one grows up affects (or effects) how one makes sense of the world and how one knows what one knows. It is significant that the differences Nisbett notes are not simply differences in a factual knowledge base but are differences in cognitive structure and, more basically, how these structures are formed: i.e., there are differences in how an individual learns and makes sense of new experiences.

The evidence for a cultural difference in perception and cognition has been raised before by comparative linguists. The Sapir-Whorf hypothesis posits that language is associated with how people perceive the world. Although individuals can find a word in their native language that will correspond to each object they perceive in the physical world, their language directs attention to different aspects of the physical world and enables them to perceive (and communicate) relationships between and among these physical objects. The perceived relationships differ depending on the language (Whorf and Carroll 1956).

This language-directed attention, which begins very early in a child’s life (Kuhl 2001), shapes how the child learns and consequentially affects learning later in life. In his study of young adults, Kozulin (1998) found that individuals who grew up in one culture and were engaged in learning tasks in another culture had specific learning difficulties. The difficulties were associated with coding schema, concepts, and graphic and symbolic devices used in communication of ideas (e.g., tables, ordering, plans, and maps). The difficulties extended to cognitive activities such as the ability to identify or define problems (the ability to apply already acquired knowledge to a set of data and infer the implicit question or issue that needed to be

resolved) and the ability to work with multiple sources of information. In short, because of the cultural environment (and the accompanying learning that was associated with this environment), the young adults were missing cognitive antecedents that would enable them to excel in their new environment.

Kozulin concluded, “cross-cultural differences in cognition are most probably related to learning practices characteristic of different cultures and subcultures,” and “two major determinants of cognitive prerequisites are conceptual literacy and facility with other symbolic psychological tools, and a mediated learning experience responsible for the integration of these tools into the cognitive system of the student” (1998, 129). Kozulin’s research went further and showed that intervention could help the learners develop the basic skills and concepts that would enable them to learn effectively in the new environment.

There is a neurological basis for these differences in epistemology and in how these differences evolve. Some of the most relevant research on this topic is interdisciplinary, work that engages neuroscientists, cultural anthropologists, language psychologists, and learning theorists (Kuhl 2001), and this work continues to contribute to our understanding of how the mind develops.

At the time of birth, a baby has about the same number of neurons (brain cells) in its brain as an adult—about 100 billion. However, there are only about 50 trillion synapses, or connections among these neurons. In the first three years, the number of synapses grows four-fold, to one quadrillion. Synapses are potential learning pathways, so this explosion of connectivity within the brain in the early years equips the child to learn from the range of new stimuli which the child experiences in these early years. The brain as ‘sponge’ metaphor has been used; others describe “the scientist in the crib” (Gopnik et al. 2001) because of the child’s exploration of the world and the discovery of new facts.

Even before the maximum number of synapses is reached around age three, the child is observing the surrounding environment and beginning to selectively sort out different stimuli. Studies of infants show that at about seven months, children give equal attention to changes in sound regardless of the language. However, by the age of 11 months, the infants already are beginning to be selective about which sounds are different and interesting. For example, at the age of seven months, Japanese and American infants are equally perceptive of the differences between the sounds of /ra/ and /la/, sounds that are easily distinguished in English but more difficult for Japanese speakers. At 11 months, the infants in an English learning environment have improved their perception of the difference between the sounds, but the infants in a Japanese learning environment have lost some of their ability to perceive the difference in sounds. A similar study with American and Taiwanese infants, using sounds in Mandarin, showed a similar tendency, with the Taiwanese infants improving their ability to distinguish the Chinese sound and the American infants decreasing in their ability to make the distinction. In summary, in both cases, infants demonstrated a significant increase in ‘native-language phonetic perception’ and a decrease in ‘foreign-language phonetic perception’ over this short period of time (Kuhl 2001).

These infant studies suggest the importance of early cultural environment to learning. Learning begins by making distinctions, by seeing differences in the environment, and by using these differences to interpret and remember experiences. The explosive period of synapse growth provides the infant with many opportunities to learn—everything from how to walk and interact with the physical environment to communicating with others in the environment. However, the growth of synapses slows quickly, and the number of synapses remains about the

same from age three until the child is about eight years old. At this point, the number begins to be ‘pruned’ in order for the remaining paths to be reinforced and become more efficient. From birth to the age of eight, the brain is being programmed to learn—in a computer analogy, the brain is being ‘wired’ to learn in a particular way (Kuhl 2001, 2002). This programming determines fundamental perceptual and cognitive frames or schemas that are used thereafter to interpret and learn from experience, and these schemas have substantial staying power. As noted in an online encyclopedia of religion, “the Jesuit maxim, ‘Give us a child until [s]he’s seven, and [s]he’s ours forever,’ has been quoted until it is a cliché, but that is because experience seems to suggest it is true” (Bailey 1998).

This early development of learning abilities shapes the perception and interpretation of experiences throughout a person’s life. It has been acknowledged for some time that knowledge and its acquisition is path dependent (Hayek 1952; Kelly 1955), but the recent advances in neurobiology are providing a better look at how this path dependency arises.

The relationship between and among culture, learning, and personal knowledge suggests that knowledge management techniques that are appropriate in one culture may not be effective for organizations that comprise members from multiple cultures or organizations that seek to serve multiple cultures. A global organization that seeks to tap into the knowledge of all its members would benefit from understanding that the knowledge embedded in members from different cultures may have different structures (schemas), and individuals who can benefit from having access to this knowledge may have difficulty in accessing this knowledge without intervention. This suggests two other propositions:

P3: For a KMS to encompass knowledge by individuals from different cultures, it should provide for multiple schemas by which the knowledge can be organized and structured in the individuals’ native formats.

P4: If a KMS is to be effective for learning by individuals with different cultural backgrounds, it should either a) have culturally-sensitive access mechanisms or b) provide for skill-building that enables acquisition of knowledge classified and structured in non-native formats.

The above discussion has shown the limitations of KMSs for global organizations, and the propositions provide guidance for the characteristics that a more culturally encompassing KMS might exhibit. What appears to be required is a different way of thinking about knowledge management in an organization that seeks to combine different cultures. The following discussion proposes one such approach: thinking of the knowledge management task as one of boundary spanning across cultures. The discussion draws on earlier articles that discuss this approach to thinking about designs for KMSs and digital libraries that seek to serve multiple cultures (Mason 2003, 2005).

A BOUNDARY SPANNING MODEL FOR KM IN MULTI-CULTURAL ORGANIZATIONS

Boundary spanning has been recognized as a necessary component in processes that require coordination and translations among diverse groups (Star and Greisemer 1989) and different functional groups or ‘thought worlds’ (Dougherty 1992). Carlile’s (2002) study of boundary spanning objects in a new product development (NPD) process suggests a useful framework for examining the functions of KMSs. Carlile’s ethnographic study of teams

performing four primary functions in the creation of a new product (sales/marketing, design engineering, manufacturing engineering, and production) identified the difficulties of communication and coordination of the different knowledge and value systems represented by the team members. He examined how the teams worked together and how the team dealt with the specialized knowledge of each area. Each of the four functional areas had ‘localized and embedded’ knowledge, structured in a way that made sense to that area, much as we envision the localized and embedded knowledge of a culture. This knowledge specialization presented a barrier to the effective operation of the NPD team—the team found it difficult to exchange and synthesize knowledge as necessary for the successful development of a new product. Carlile observed that the team overcame this barrier by using boundary spanning objects that operated at three different levels: syntactic, semantic, and pragmatic.

At the syntactic level, shared repositories enabled communication of facts and agreed-upon tasks and actions. At the semantic level, standardized forms and methods enabled not only communication of facts but also provided a way for the different groups to clarify differences in meaning. The objects at this semantic level (standard forms and methods) enabled the team to translate the localized knowledge embedded in one group into forms that other groups could understand. At the pragmatic level, objectives, maps, and models enabled each group to transform embedded knowledge into knowledge that the entire team (and others not in the group) could understand.

In earlier studies of communities, Brown and Duguid (1998) pointed out the roles of boundary spanning activities and noted particularly the need for translators between communities. In commenting on Carlile’s model, Brown (2002) suggests that Carlile’s three levels correspond to three different levels of knowledge ambiguity among communities of practice. At each level, different types of boundary objects are necessary for communication, knowledge transfer, and learning.

At the syntactic level, the differences across the boundaries are explicit, clear, and stable. A shared syntax is a necessary (but not necessarily sufficient) condition for sharing knowledge under these conditions. Taxonomies and classification (e.g., shared databases) provide this syntax and enable the sharing and transfer of knowledge among groups that have a clear understanding of their differences and understand that these differences are relatively stable. For a multi-cultural organization, this condition might be represented by an organization that has been relatively stable over time, so that the different cultures within the organization have a clear understanding of their differences.

Under these conditions of explicit and clear differences, this syntactic level is a necessary condition for knowledge sharing in a multi-cultural organization. Agreements on syntax are required for data to be exchanged between cultures and communities. As a minimum, agreements at this syntactic level deal with technical standards and data architecture. Although data can be shared at this level, as Carlile and Brown have noted, the sharing of data is insufficient for the exchange of knowledge and learning.

At the semantic level, the differences across the boundaries may be neither clear nor stable (Brown 2002). The solution to spanning the boundary at this level requires a method of translating meanings across boundaries. At this level, Carlile (2002) observed the use of standardized forms and methods as boundary objects.

For a KMS in an organization that comprises, or seeks to serve, multiple cultures, this semantic level is an additional necessary, but insufficient, prerequisite for knowledge sharing. For groups that have similar cultures, in which concepts are similarly named and relationships

among concepts are similar, relatively simple translations that involve mapping of concepts from one language or mental model to another may be sufficient. In some cases the models may need to be dynamic and agile. For example, if the technology for exchanging information between groups is critical to an exchange (e.g., as in a technology transfer), or if technology is the focus for exchanging knowledge, the dynamic nature of technology may require the models employed in the exchange to be agile and to enable interpretation of flexible and evolving concepts. Even more difficulty may be expected if the different cultures are experiencing different rates of progress. In such situations and any situation in which the differences are neither clear nor stable, frequent communication between the groups may be necessary to assure currency in meaning and to assure that new concepts are absorbed by both groups.

At the semantic level, if there has been agreement at the syntactic level and there is the basis for a shared communication language, metaphors may be a useful approach to communicating new ideas (Lakoff and Johnson 1980), if such metaphors can be apprehended by both cultures. For groups that have more distinct cultures, with few shared concepts, such translations or mappings may not be feasible without additional explorations at the pragmatic level. Indeed, even the metaphorical concept of a library, widely used in most Western cultures, may not be shared across some cultural boundaries (Duncker 2002).

The pragmatic level provides a level for exploring other differences across boundaries. However, explorations at this level require some degree of agreement at the other two levels. In his discussion of this model, Brown (2002) notes that the knowledge of one group is not neutral to the knowledge of another group or community. Different communities may have different values and/or power relationships, and this level of difference requires boundary objects that provide additional capability beyond the first two levels. At the pragmatic level, the groups must transform their knowledge and create new (shared) knowledge rather than simply exchanging or transferring knowledge. Resolution of group differences requires objects such as models and maps, objects that enable the surfacing of assumptions, tacit knowledge, and values. At this level, shared syntax and meaning must be sufficient to permit the sharing of methods of thinking and the development of a shared basis for understanding each group's values and mental schema. It is at this stage that intervention, perhaps by someone who has experience with both cultures, may be necessary.

In this model of boundary spanning, the lower two levels are necessary but insufficient for complete sharing of knowledge and the development of mutual understandings that would enable the creation of new knowledge. The mutual understandings and the associated trust that comes from these understandings may be necessary if a KMS is to support an organization comprising users from multiple cultures. This suggests a fifth proposition:

P5: For a KMS to be effective in a multi-cultural organization, it should provide boundary spanning mechanisms and processes at the syntactic, semantic, and pragmatic levels.

Mechanisms and processes at the syntactic and semantic levels of this model are readily apparent in observations of commercially-based KMSs implemented at individual organizations, but corresponding processes at the pragmatic level are rare. The few cases in which such pragmatic level processes were reported noted the use of face-to-face meetings and structured forums in which distinct groups discussed values and differences. Some incentives and standards, designed to transform the executive level goals and values (e.g., the use of the KMS) into practice at the operational level of the firm, were judged to be pragmatic boundary spanning activities in which the boundary was hierarchical rather than a national, cultural, or ethnic (Mason 2003).

Access to all the knowledge available within an organization is constrained when a KMS does not explicitly plan for the inclusion of multiple cultures in the creation, storage, and transfer of knowledge. A KMS designed by and for a particular organizational culture by its nature restricts the range of schema by which knowledge is classified and stored, and thus the creation of new knowledge is limited to discussions within the meta framework provided by the collective combination of these schema.

CONCLUSION AND DISCUSSION

Prior work in knowledge management systems has not been sensitive to either the value of knowledge that may be embedded and localized in different cultural groups or to ways in which this knowledge might be made accessible. This lack of sensitivity means that global organizations, organizations that seek to make use of the knowledge of all their members and who seek to serve multiple external clients, are inadequately prepared to do so with current models and implementations of knowledge management systems. The theoretical goals of knowledge management systems—to enable access to the widest range of knowledge and to provide the capability to create new knowledge from existing knowledge—are not being realized in today's global organizations.

Recent interdisciplinary research involving neuroscientists, cultural anthropologists, language psychologists, and learning theorists has contributed to our understanding of how the mind develops. This work has provided evidence for the opening quote from Hall that emphasizes the cultural dimension of learning and knowledge creation. The early cultural environment affects the wiring of the brain so that later learning is shaped and guided by these native cultural experiences.

If organizations are to benefit from the recent understanding of brain development and are to create KMSs that support global efforts and enable knowledge creation and exchange among multiple cultures within the organization, new approaches are required. One approach is to consider distinct cultures as different learning communities and to think of a KMS as a boundary spanning process. This paper suggests that the three-level boundary spanning model proposed by Carlile can help guide the development of mechanisms for incorporating different cultures in an organizational KMS. Each level presents different challenges. The syntactic and semantic levels are more easily amenable to the application of current information technologies. However, these are simply necessary levels and are not sufficient for a multi-cultural KMS. Completing the model requires these levels to be used to work at the third (pragmatic) level of the model. It is at this level that the culturally specific tacit dimension of knowledge may be reflected, and it is at this level that the organization which seeks to encompass multiple cultures must provide social mechanisms by which the issues of different values can power can be negotiated. Only then can a global organization unlock the knowledge embedded in its culturally diverse members and realize the original vision of a KMS that enables ready access to the full range of knowledge within the organization's boundaries.

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