WORKING PAPER NO.282

A Synthesis of Organizational Learning & Knowledge Management Literatures

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March 2009

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ABSTRACT

This paper synthesizes the literatures from the organizational learning and knowledge management fields. Two distinct epistemological traditions are identified and the literature under each tradition is synthesized separately. Epistemology of possession considers knowledge as an object that can be codified, stored, retrieved and applied to achieve organizational outcomes. The practice-based-perspective of knowledge assumes knowledge as an integral part of doing and as something that cannot be distinct from the process of learning. The major contribution of this paper is to present an integrated model of organizational learning synthesizing the frameworks of Kolb, Crossan et al. and Nonaka.

INTRODUCTION

The purpose of this paper is to contribute to better understanding of the concepts of organizational learning and knowledge management. Organizational learning and knowledge management are concepts that have grown significantly in the academic and business worlds, especially in recent times. Interest has been significantly enhanced by frameworks such as the knowledge-based view of the firm (Grant, 1996) and by the understanding of knowledge being a source of competitive advantage to the firm (De Guess, 1988; Prahalad & Hamel, 1990). Though there is significant logical commonality across the concepts, they have been growing as separate themes, leading to variety and confusion (Chiva & Alegre, 2005). Knowledge management has taken a more practice- and technology-oriented stance in literature and practice, while organizational learning has dealt more with the social and psychological processes of learning and their relevance to human resources. There are very few works that simultaneously link both these concepts (examples include Easterby-Smith & Lyles, 2003; Chiva & Alegre, 2005). This paper is a step forward in addressing this gap. This paper synthesizes literature pertaining to both organizational learning and knowledge management and presents a foundation on which further research in the area of organizational learning and knowledge management can happen.

Literature in the areas of organizational learning is voluminous (Huber, 1991) and it is not our intention to replicate them here. In this paper we pick upon key popular models and frameworks related to organization learning and knowledge management and synthesize them. While doing so, the paper also highlights key tensions that prevail in this field in the areas of: knowing-knowledge, tacit knowledge-explicit knowledge and cognitive-behavioral aspects of learning.

TWO EPISTEMOLOGIES

Researchers working on organizational learning and knowledge fall under two main schools of thought – the taxonomic school (epistemology of possession) and the practice school (epistemology of practice) (Tsoukas 1996; Orlikowski 2002). We present a brief overview of both perspectives before we proceed further.

Epistemology of possession: The work that falls in this tradition has been primarily taxonomic in character and hence is also referred to as the 'taxonomic school' (Tsoukas 1996). Researchers adopting this epistemological stance see knowledge as a commodity that can be possessed, stored, retrieved and applied for future use. It is seen as an outcome of the learning process. They classify knowledge into different categories: a) explicit knowledge – knowledge that can be codified; b) tacit knowledge – knowledge that cannot be articulated and codified; c) individual knowledge – possessed by an individual and d) group knowledge – possessed by the group.

Spender (1996) provides a typology of knowledge to capture the different types of knowledge that organizations make use of. According to Spender (*ibid.*), there are four types of organizational knowledge: a) conscious – explicit knowledge held by the individual; b) objectified – explicit knowledge held by the organization; c) automatic – preconscious individual knowledge; and, d) collective - highly context-dependent knowledge which is manifested in the practice of an organization.

Thus in this tradition of epistemology of possession, knowledge is seen as an outcome of the learning process and something that is distinct from the process itself.

Epistemology of practice: The practice-based perspective conceptualizes knowledge not as an object that can be codified, stored and retrieved for future use, but as something that is embedded within and inseparable from practice (Hislop 2005). Cook and Brown (1999) call this the 'epistemology of practice'. In this philosophy, there is no distinction between the process (learning) and outcome (knowledge). Both mutually constitute each other.

We observe that the two epistemological strands are different and are based on different assumptions. Hence any attempt to synthesize the literature in this field has to acknowledge this difference in the two types of epistemologies. We synthesize the literature under each of these epistemological strands separately.

EPISTEMOLOGY OF POSSESSION

As we noted earlier, in this tradition of epistemology of possession, knowledge is seen as an outcome of the learning process and something that is distinct from the process itself. Organizational learning leads to creation of stocks of knowledge. Thus, the domain of organizational learning attempts to understand how the stock of knowledge changes over time. Managing the stock of knowledge in a firm as it flows over time is the domain of knowledge management (Bontis, Crossan and Hulland, 2002). The study of performance related aspects of knowledge and learning falls under the domain of strategic management. In this section, we synthesize the literature under this epistemological tradition. Our synthesis is summarized in the form of Figure – 1.

Insert Figure 1 about here

We begin with the literature that deals with definition of organizational learning which brings out one of the key debates of the field, viz., cognition versus behaviour. We then provide a brief introduction to the various types of learning processes. In the next subsection, we present one of the key contributions of this paper - an integrated process model of organizational learning. The process of organizational learning leads to the creation of stock of knowledge. This stock of knowledge is managed by a knowledge management system and is leveraged to achieve organizational outcomes.

The definitional debate: Cognition vs. Behaviour

Though conceptions of organizational learning are ubiquitous (Dodgson, 1993), very little agreement exists on the definition of organizational learning (Fiol and Lyles, 1985). Bontis, Crossan and Hulland (2002), for example, present a table with 21 definitions of organizational learning. The primary debate on the definition of organizational learning revolves around as to what constitutes organizational learning – a change in cognition or a change in behaviour. While the change in behaviour is easier to take notice of and track,

a change in cognition cannot be measured or observed easily. One another way to look at this debate is to see whether researchers have approached organizational learning as a process (cognition school) or as an outcome (behavioural school).

Researchers belonging to *cognition school* maintain that an organization need not explicitly display a change in its behaviour for one to conclude that organizational learning has occurred. Huber (1991) maintains that an organization has learnt, if through its processing of information, the range of its potential behaviours is enhanced. It is not necessary for an organization to display the changed behaviour. Fiol and Lyles (1985) define organizational learning as development of insights, knowledge, and associations between past actions, the effectiveness of those actions and future actions.

Researchers belonging to the *behavioural school* of learning have maintained that an organization is said to have learnt only when it shows a change in its behaviour in one form or the other. Levitt and March (1988) define organizational learning as 'target oriented'. Simon (1969) defined organizational learning as the growing insights and successful restructurings of organizational problems by individuals reflected in the structural elements and the outcomes of the organization itself. Dodgson settles for a broad definition of organizational learning as *"[the] ways firms build, supplement and organize knowledge and routines around their activities and within their cultures, and adapt and develop organizational efficiency by improving the use of broad skills of their workforces." (1993:37)*

We believe that it makes sense to use a broader definition of organizational learning that includes both changes in cognitive map and expressed behaviour. In this, we follow Fiol and Lyles (1985) who show that there is a tendency among researchers to look at both behavioural and cognitive development; and, Smith, Crossan and Nicolini (2000) who claim that the cognition-behaviour debate has gone silent in recent years with researchers settling for a broader definition that includes both aspects. A change in behaviour without any change in the understanding of the phenomenon can occur due to blind imitation or a random variation or luck. It is pointless to label such cases as organizational learning, as

nothing much could be gained by studying such phenomena. A change in cognitive map without a change in behaviour is difficult to measure. Hence it is useful to settle for a broader definition of organizational learning that includes both cognitive and behavioural aspects.

Types of learning

Researchers have looked at various types of learning processes. In one of the earliest works on organizational learning, Argyris and Schon (1978) give two major types of learning – single loop and double loop learning. *Single loop learning* refers to a lower level learning while *double loop learning* refers to higher level learning. According to Argyris and Schon:

"Organizational learning involves the detection and correction of error. When the error detected and corrected permits the organization to carry on its present policies or achieve its present objectives, then that error-detection-and correction process is single-loop learning. Double-loop learning occurs when error is detected and corrected in ways that involve the modification of an organization's underlying norms, policies and objectives." (1978:3).

An organization can learn through multiple ways. Huber (1991) lists congenital learning, experiential learning and vicarious learning as three ways of knowledge acquisition. *Congenital knowledge* is a combination of knowledge inherited by an organization at its conception and the additional knowledge acquired prior to its birth. The individuals or the organizations that create new organization have knowledge about the new organization's initial environment and about the processes that the organization can use to carry out its creator's intentions, and they make this knowledge available to the new organization's members (*ibid.*). Organizations also learn and acquire knowledge through *direct experience.* The learning may be both intentional and systematic or not so. Huber (1991) lists organizational experiments, organizational self appraisal, experimental organizations, unintentional and unsystematic learning, and experienced-based learning curves as ways by which organizations learn through experience. *Vicarious learning*

occurs when organization learn from the experiences of other organizations. Organizations capture the experience of other organizations through the transfer of encoded experience in the form of technologies, codes, procedures, or similar routines (Levitt and March 1988). Organizations also learn from their mistakes. A rich body of literature is available on organizations learning from their mistakes (see for e.g., Edmondson 2004). Sometimes, organizations may attribute wrong causality to the outcomes and hence their learning may be wrong. Such instances of learning are termed as *superstitious learning* (Levitt and March, 1988). Miner and Mezias (1996) list one more type of learning and name it *generative learning*. Generative learning or discovery includes an active creative component that goes beyond discovering performed external regularities.

Though organizations may learn from different ways, the essential process that constitutes each learning experience is the same and that will be the subject matter of next sub-section. We present a process model of organizational learning in the next sub-section. Crossan, Lane and White (1999) provide a four stage process model of organizational learning. Nonaka (1994) provides a spiral model of knowledge creation in organization. We attempt to integrate both these models and present an integrated process model of organizational learning.

AN INTEGRATED ORGANIZATIONAL LEARNING MODEL

It is well accepted that learning begins from the individual level and progresses to the group and the organizational level. Organizational learning, however, is not simply the sum of the individual member's learning (Fiol & Lyles, 1985). Learning processes occur at the levels of Individual, Group and Organization and eventually lead to organizational learning. A question arises as to what differentiates organizational learning from individual learning. Organizational learning is said to have occurred when individual learning or group learning is transformed into a form that can aid other subgroups or future employees of organization in their work. Levitt and March (1988) defines organizational learning to have occurred when experiences and inferences are encoded in routines to guide future behaviour. Crossan, Lane and White (1999) identify this fact

clearly by pointing out institutionalizing as the learning sub-process that occurs at the organizational level. They define institutionalizing as the 'process of embedding learning that has occurred by individuals and groups into the institutions of the organization including systems, structures, procedures and strategy' (1999: 525). It is this 'institutionalization' or 'encoding' that differentiates the learning at the organizational level from the individual and group levels. We cover the processes that occur at each level in our integrated process model.

Individual level learning processes have been well modeled by Kolb in his Experiential Learning Theory (ELT) (Kolb, 1993). The other two prominent models of organizational learning - the 4I model of Crossan, Lane & White (1999) and the knowledge creation spiral model of Nonaka (1994) - are comprehensive and multilevel, straddling all the three levels. We will now look at these models and unify them into our proposed model.

An integrated process model of organizational learning

Kolb (1993) proposed an experience-based model of learning, drawing upon the earlier works of Lewin, Dewey and others (Kayes, 2002). He emphasized the key role that experience played in the learning process of an individual. Experiential learning is based on assumptions that are different from the behavioral and cognitive theories of learning. In ELT ideas are not fixed elements of thought but are formed and re-formed through experience. The cyclical process of learning from experience goes through four stages: An individual feels or experiences a situation - *Concrete experience*; reflects and makes observations on that experience - *Reflective observation*; forms abstract concepts and generalizations - *Abstract conceptualization*; and, based on those reflections, tests those ideas in a new situation, leading to another *concrete experience* (Kim, 1993). Learning, therefore, is a process whereby knowledge is created through the transformation of experience. This knowledge, which is at the individual level, defines the cognitive maps which further influence the abstraction and intuition processes of the individual.

The Crossan, Lane and White (1999) model is a rich, dynamic and multilevel framework that specifies four processes through which organizational learning occurs. The four processes are bi-directional and involve both the creation and application of knowledge at various levels. As a multilevel model, it shows how the individual learning is connected to organizational learning through the *4I* processes: *Intuiting, Interpreting, Integrating and Institutionalizing*. We will use this model as a base for our unifying framework. The challenge here is that this model does not distinguish between types of knowledge explicitly, while Nonaka (1994) builds his model on the divide between tacit and explicit knowledge.

Nonaka (1994) argues in his 'spiral' model that it is the continuous interaction between tacit and explicit knowledge that drives new knowledge creation; where tacit knowledge is knowledge deeply rooted in action, commitment and is difficult to codify and explicit knowledge is knowledge that can be transmitted through formal language. Another dimension that Nonaka highlighted was the social interaction aspect of knowledge creation – *"organizational knowledge creation, therefore, should be understood in terms of a process that 'organizationally' amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of [the] organization"* (1994:17). As a foundation for the interplay between tacit and explicit knowledge, Nonaka described fours modes of knowledge conversion: Tacit to Tacit - *Socialization*; Tacit to Explicit – *Externalization*; Explicit to Explicit - *Combination*; and, Explicit to Tacit- *Internalization*.

We propose that Nonaka's conversion steps help enhance the 4I model by filling in details between the four I-steps and linking the type of knowledge required at each of the stages.

Insert Figure 2 about here

Intuiting is situated purely at the individual level and is the recognition of patterns from personal experiences. As Crossan et al. mention, *"[T]he subconscious is critical to understanding how people come to discern and comprehend something new"* (1999:526) from their experience. This has a clear linkage to experiential learning and we therefore propose that the ELT model would feed into this process step.

Nonaka labeled the process of conversion of (individual) tacit knowledge to (group) tacit knowledge as *Socialization*. The prior base that enables intuiting is the experience of the individual, which can be taken to be tacit knowledge. The intermediate conversion provided by socialization helps feed into the next 4I process step (interpreting) is this conversion, by enabling the sharing of experiences.

Individuals develop insights based on these experiences and translate them into metaphors to move to the next step of *interpreting*. This process step involves communicating with others in order to explain novel insights, towards creating a shared meaning within the group, and is across the individual and group levels.

The sharing of experiences through meaningful dialogue leads to conversion of (group) tacit knowledge to (group) explicit knowledge; this process was called *Externalization* by Nonaka. The explicit knowledge provided by this conversion at the group level would feed into the next step (integrating) of the 4I model. The internal dialogues would aid the creation of a collective action.

The third step - *integrating* – is the process to create collective action in the group, through adjustments and negotiations. Deeper understanding evolves through stories that are told and retold by the members.

The next mode of knowledge conversion uses social processes to combine different bodies of (group) explicit knowledge; Nonaka labeled this step as *Combination*. At this point the group's explicit knowledge which is shared and commonly understood (for e.g.,

stories) is combined together to feed into the next 4I process step, by becoming a way of common action and understanding for the group (routines or procedures).

These shared understandings feed into the fourth and final step – *institutionalizing* – where the learning gets embedded into the organizational memory (Walsh & Ungson, 1991) through structures and routines. These institutionalized routines impact the intuiting processes of an individual and hence the model is dynamic.

The (group) explicit knowledge then is converted to (individual) tacit knowledge through the process defined by Nonaka as *Internalization.* At this stage the group explicit knowledge becomes embedded as the organizational routines in the organizational memory (Walsh & Ungson, 1991). These routines are picked up and internalized by individuals as their tacit knowledge and feeds into their experience base and continues the learning cycle by impacting their intuiting process.

Crossan et al. (1999) also talk of a tension between assimilating new learning and exploiting past learning, similar to that highlighted by March (1991). Institutionalized learning from the past is an exploitative mechanism whereas the processes of intuiting, interpreting and integrating allow for exploration.

Thus, in this manner, learning that happens at the individual level gets transferred to the organizational level, which can then be leveraged to achieve its goals and outcomes. We shall now present a brief account of the factors that impact the processes of organizational learning.

Factors impacting the organizational learning process

As we have seen, organizational learning processes are multilevel processes; consequently there are many factors that influence the functioning of these processes. Contextual factors like culture, strategy, external environment, power and politics, turnover and grafting, scanning, social networks and organizational structure impact organizational learning processes (Fiol & Lyles, 1985; Levitt & March, 1988; Bapuji &

Crossan, 2004). These factors have an interdependent relationship with organizational learning, such that they affect organizational learning and the learning in turn affects them (Fiol & Lyles, 1985).

a) Culture and values: Certain aspects of organization culture, comprising of norms, beliefs and ideologies, are conducive to organizational learning whereas others hinder the learning processes at each level of the organization. Research, for example, shows that managerial support towards openness, participative decision-making, positive supervisory behavior and caring can facilitate learning (Bapuji & Crossan, 2004; see also Edmondson, 2004; von Krogh, 1998). A culture that focuses more on codification of knowledge could negatively impact its competitive advantage by increasing the knowing-doing gap (Pfeffer & Sutton, 1999). Rewards and recognition policies can lead to silos between groups and the Not-Invented-Here syndrome. Organizational learning eventually affects and modifies the norms and beliefs of the organization.

Leonard-Barton (2000), in her case study of a steel firm proposes that values pertaining to four subsystems supported and enabled the factory to become a learning laboratory. The first value to help own problems and solve was egalitarianism and respect for the individual – the assumption that all individuals have potential to contribute to the organization. People were encouraged to speak out their opinions. The second value towards integrating knowledge was shared knowledge – an ideology of looking towards the benefits of the whole and that everyone adds their bit to it. The third value towards challenging status quo was positive risk – being open to taking risks and learning positively from the mistakes. The final value towards creating a virtual organization was openness to knowledge from outside – being against the not-invented-here syndrome.

b) Power and politics: Organizational learning models have generally not explained why certain ideas and insights are picked up and get institutionalized. Power is one such explanatory construct (Lawrence, Maus, Dyck and Kleyson, 2005). Power influences the social processes that are part of organizational learning, thereby allowing individuals and groups to influence others into acceptance of their views and insights. Lawrence et al.

(2005) propose an extension of the 4I model of Crossan et al. (1999) by incorporating types of power - episodic and systemic - and their influence on the various stages of learning. Todorova and Durisin (2007) recognize that power relationships moderate the processes that make up the absorptive capacity of an organization. Subsequent research on this topic is still limited and this offers a rich ground for future research.

c) Strategy: The strategy of the organization provides direction and context for the organizational learning processes. It defines the limits of decision-making and a context for interpretation of the environment (Fiol & Lyles, 1985; Bapuji & Crossan, 2004). The decision to balance exploration and exploitation (March, 1991) would also define whether the learning processes will stress more on the creation of new knowledge or exploiting the existing knowledge. There is a constant tension in achieving a balance between exploration and exploitation (March, 1991) and decisions taken would impact, for example, the importance that is accorded to the different stages of the 4I model of Crossan et al. (1999).

d) Structure: The structure of an organization plays a significant role on the learning processes of the organization (Fiol & Lyles, 1985). This can also be linked to the contextual factor of strategy – as structure follows strategy (Chandler, 1962) – which impacts organizational learning processes. A mechanistic structure (Burns & Stalker, 1961) would suit an exploitative strategy whereas an organic structure (*ibid*) would be the best one for an explorative strategy. Misalignment between strategy and structure would create problems in generating knowledge-based competitive advantage for the organization.

e) External environment: Organizations don't learn in a vacuum, but learn in an environment comprising of its competitors and other stakeholders (Levitt & March, 1988). Access to resources from this environment, opportunities and threats would impact the learning processes (Bapuji & Crossan, 2004). Learning is also impacted by strength of competition, their rate of learning and technologies involved (Levitt & March, 1991). Powerful organizations could also impact the learning processes of weaker

organizations (*ibid.*). In the rapid growth bio-technology industry, a study (Powell, Koput & Smith-Doerr, 1996) found that the organizations depended heavily on external collaboration to supplement their learning processes. Stable environments would call for an in-depth learning and mastering of specific competencies, whereas dynamic environments would call for more generic competencies in learning.

f) Grafting/Turnover: Movement of people in and out of organizations is likely to impact the learning processes since it impacts the social processes involved. Turnover, in March's (1991) simulation, was found to have an impact on the learning capabilities of the organization. A moderate amount of turnover was found to increase the organizational knowledge achieved over time. In current practice the significant amount of turnover in organizations is cited as a major cause of concern, which organizations expect KMS to resolve. Grafting refers to the infusion of new members into the organization (Huber, 1991) in order to acquire knowledge that it did not possess earlier. Acquisitions made by organizations are one way to graft on new knowledge. Research in this area is limited (*ibid.*) and given the immediate relevance to practice, makes it another rich area for future research.

g) Social networks and Social capital: Social capital refers to the goodwill that is engendered by the fabric of social relations and that can be mobilized to facilitate action (Adler & Kwon, 2002). It is applicable at all levels of the organizations and can thus impact the learning processes at those levels. The benefits of social capital are access to information, ability to influence and generating solidarity (*ibid.*). These aspects impact the learning processes by means of information availability, power and influence and creation of norms and beliefs. There are two key ways in which social capital is got: from strong internal ties, i.e., *bonding* and by *bridging* structural holes.

Network structures and ties also have significant impact on learning processes (Burt, 2004; Adler & Kwon, 2002). Strong ties are needed to access complex, non-codifiable knowledge (Szulanski, 1996; Hansen, 1999) whereas weak ties lead to more novel information and effective search for information (Hansen, 1999). Bonding and network

range were found to ease knowledge transfer in a study by Reagans and McEvily (2003). Organizations with management and collaboration networks that bridge structural holes (boundary scanning roles) in their markets seem to learn faster and to be more productively creative. Embeddedness impacts learning through better information processing, problem recognition, performance feedback and invention of new solutions (cf. Uzzi, 1997). It is observed that social capital derived from inter-organizational networks depends on the network types and has implications on its structural, cognitive and relational aspects (Inkpen & Tsang, 2005).

In this sub-section, we presented an integrated model of organizational learning and the various factors that impact the processes of organizational learning. The outcome of this organizational learning process is a stock of knowledge, to which we turn our attention to in the next sub-section.

Outcomes of learning – Knowledge and Organizational Memory

As observed earlier, the key difference between individual learning and organizational learning is that unlike individuals, organizations develop and maintain learning systems that not only influence their immediate members, but are then transmitted to others by way of organization histories and norms (Fiol and Lyles, 1985). The outcomes of the learning process, i.e., the traces of the stimulus and responses are stored in the form of mental and structural artifacts in organization (Walsh and Ungson, 1991). Walsh and Ungson (*ibid.*) term this faculty of retaining and recalling things past as organizational memory. They are also referred to as knowledge reservoir (Argote and Ingram, 2000) and intellectual capital (McGaughey, 2002). Being the storehouse of the learning processes and a concept that is integral to the notion of learning at the organizational level, organizational memory is an important concept in the field of organizational learning. Huber (1991) identifies organizational memory as one of the four main constructs related to organizational learning. Walsh and Ungson's (1991) is a good attempt to build coherent theory on organizational memory.

Argote and Ingram (2000) state that knowledge is embedded in the three basic elements of organizations – members, tools, and tasks – and the various sub networks formed by combining and crossing the basic elements. Walsh and Ungson (1991) identify five internal bins and one external bin in which the outcomes of the learning process are stored. According to them, the outcomes of learning processes, in terms of traces of stimulus and responses, are stored in a) *individuals* - in their recollections, cognitive map etc.; b) *culture* - a kind of shared understanding, defined as a learned way of perceiving, thinking and feeling about problems that is transmitted to members in the organization (Schein 1984); c) *transformation* – embedded in the logic that guides the transformation of an input into an output and in those transformations themselves; d) *structures* – organization structure in terms of hierarchy, relationships etc.; e) *ecology* – the actual physical structure or workplace ecology; and, f) *external archives*.

One important class of repository wherein the outcome of learning that is institutionalized and stored for future use is that of *organizational routines*. In fact, Cyert and March depict organizational routines as the *'memory of an organization'* (1963:101). Levitt and March (1988) give a routine-based conception of learning wherein organizations learn by encoding inferences from history into routines that guide future behaviour. They conceptualize routines to include forms, rules, procedures, conventions, strategies and technologies around which organizations are constructed and through which they operate. Feldman and Pentland (2003) defined organizational routines as repetitive, recognizable patterns of interdependent actions carried out by multiple actors. Hence, organizational routines encompass all the three elements of organizational memory recognized by Argote and Ingram (2000) and the five bins of Walsh and Ungson (1991).

We observe that organizational memory defined in terms of bins (Walsh and Ungson, 1991) and elements (Argote and Ingram, 2000) refer to the passive repositories of the outcomes of learning whereas routines tend to give a more active view. This view of ours is supported by the fact that Feldman and Pentland (2003) recognize that organizational routines have an inherent capability to generate change. They point out that organizational routines have two aspects: an ostensive aspect, which is an abstract,

generalized idea of the routine and a performative aspect, which deals with specific actions by specific people in specific places and times. In a way, the ostensive part is more of organizational memory as a 'bin'. By recognizing the effect of agency and embeddedness of routines and their performative aspect, the literature on routines also deal with how routines are put into practice and affect behaviour and organizational outcomes. We had earlier argued why organizational memory is an important construct in the field of organizational learning. But in terms of literature, very little is available on organizational memory (exception being Walsh & Ungson, 1991). We speculate that the reason may be that the reason is literature on routines is rich enough (cf. Becker, 2004) to take care of the organizational memory in terms of its passive part and also the active part in terms of how practice is affected.

Feedback loop from organization memory to organizational learning process.

In their seminal piece on organizational learning, Fiol and Lyles (1985) recognize that there is an interaction between the outcomes of learning and the learning process. The outcomes influence the learning process. Two of the four contextual factors that they identify as affecting the probability that learning will occur are structure and culture – which are two of the bins identified by Walsh and Ungson (1991) as comprising organization's memory, which is the repository of the outcome of the learning process. Fiol and Lyles state that, *"Though often seen as an outcome of learning, the organization's structure plays a crucial role in determining these processes"* (1985: 805). Levitt and March (1988) also recognize this when they point out that the inferences that are encoded in routines guide future behaviour. This notion of the outcome of the learning process affecting the process in a kind of feedback loop is further explored by Cohen and Levinthal (1990) in their conceptualization of absorptive capacity.

Absorptive capacity refers to the ability of the firm to recognize the value of new information, assimilate it and apply it to commercial ends (Cohen & Levinthal, 1990). In other words, absorptive capacity refers to an organization's ability to learn. Cohen and Levinthal (*ibid.*) suggest that a firm's absorptive capacity is largely a function of the firm's level of prior related knowledge. Learning is cumulative and path dependent.

Learning performance is greatest when the object of learning is related to what is already known. Individuals and organizations rely on their existing knowledge stock to recognize the value of any new information that they come across and the speed at which they assimilate and exploit that new information. Hedberg states that: *"Members come and go, and, leadership changes, but organizations' memories preserve certain behaviours, mental maps, norms and values over time"* (1981: 6). Thus it is clearly seen that an organization's memory, i.e., its repository of the outcomes of the previous learning processes, affects its learning process in an interactive manner.

This feedback loop can have both positive and negative effects. The feedback can be positive in that an organization would be able to learn faster and better if the new idea is related to the existing knowledge of the firm. The other extreme of this would be that a firm might fail to recognize the value of new information that is not related to its current knowledge, even though the new information may hold promise and affect the performance of organization in the long run. This drawback is partially addressed by Levinthal and March (1993) when they identify the tendency of firms to overlook distant places as one of the myopic tendencies that firms have towards learning. Another related notion is that of 'competency trap' which can occur when favourable experience with an inferior procedure leads an organization to accumulate more experience with it, thus keeping experience with a superior procedure inadequate to make it rewarding to use (Levitt & March, 1988). It is noteworthy that this concept is related to the path dependency effect of learning and captures the evergreen tension in the field of organizational learning, viz., the tension between exploration and exploitation (March, 1991).

The output of organizational learning, i.e., knowledge, has to be managed and leveraged to achieve organizational outcomes. This falls under the domain of knowledge management. The stock of knowledge that results from the learning process serves as an input to the knowledge management system in an organization. We now turn our attention to the Knowledge Management Systems.

Knowledge Management Systems

Knowledge Management refers to identifying and leveraging the collective knowledge in an organization to help the organization compete (Alavi & Leidner, 2001). Knowledge Management Systems (KMS) refers to the class of information systems used for this purpose. Knowledge Management in practice has taken a very technical view and focuses largely on information systems as an enabler of knowledge management. Alavi & Liedner (2001) give an account of the various information systems that are available to an organization and how different types of information system are appropriate for different processes of knowledge management.

Knowledge Management (KM) in organizations consists of four processes: a) creation, b) storage, c) transfer and d) application of knowledge (Alavi & Leidner, 2001). *Knowledge creation* processes generate new knowledge within the organization; the Organizational learning processes described by the 4I model of Crossan et al. (1999) and Nonaka's spiral model (1994) amongst others deal precisely with knowledge creation. *Knowledge storage and retrieval* processes are closely related to the concept of organizational memory (Huber, 1991). These two processes are covered earlier in the paper. In this sub-section we focus on knowledge transfer and application.

Knowledge Transfer: Knowledge transfer is the process through which one unit of the organization is affected by the experience of another (Argote & Ingram, 2000). Knowledge transfer is an important component in organizational KM. The need to identify and make available knowledge to groups in need of it is significant to leveraging the organizational knowledge. Knowledge transfer has many benefits for organizational performance but effectiveness varies considerably across organizations (*ibid.*).

Knowledge transfer can be through formal or informal means (Alavi & Leidner, 2001). Formal means of knowledge transfer are through best practice transfers (O'Dell & Grayson, 1998), where the organization plans and executes a systematic transfer through the use of benchmarking teams, best-practice teams, knowledge networks and internal audit mechanisms. Szulanski (1996) described best practice transfer within firms as going

through four stages: initiation (decision to transfer), implementation (actual transfer), ramp-up (usage by recipient) and integration (institutionalized by recipient). Ingram and Argote (2000) refer to processes of moving knowledge reservoirs as means of transferring knowledge. Knowledge reservoirs refer knowledge that is embedded into members, tools and tasks and their sub-networks. Moving members, tools or networks can lead to knowledge transfer.

Transfer is not easy and is impacted by silos within the organization, cultural factors like Not-invented-here (NIH) syndrome, lack of trusting relationships, over-reliance on explicit knowledge, and not accounting for time to learn and share (O'Dell and Grayson, 1998). In his study on best-practices transfer in eight companies, Szulanski (1996) highlights the recipient's lack of absorptive capacity, causal ambiguity (tacitness of the knowledge) and depth of the tie between the sender and the recipient factors as major barriers to knowledge transfer within firms. Hence knowledge related factors are found to be more important than motivational factors. Characteristics of the social networks also affect the extent of knowledge transfer (Argote & Ingram, 2000). Hansen (1999) found that weak ties helped in information search, but where the knowledge was not codified strong ties aided in transfer the knowledge and lead to faster project completion. Reagans & McEvily (2003) found that cohesion and network range eased knowledge transfer over and above the effects of the strength of ties between people. Kogut and Zander (2003) found that transfer of knowledge that is highly tacit is more likely to happen to subsidiary companies rather than external organizations.

Knowledge Application: As per Grant (1996) the competitive advantage arises from the application of knowledge rather than the knowledge itself (cf. Pfeffer & Sutton, 1999; Alavi & Leidner, 2001). Grant (1996) posited that such advantage would arise from the organizational routines. Institutionalizing of knowledge is taken akin to application of knowledge.

In terms of KM strategies organizations need to build capabilities to transform transaction data into decision-making knowledge which in turn improves the financial and behavioral

outcomes of the organization (Davenport, Harris, De Long and Jacobson, 2001). This supports the view that the application of knowledge to obtain (good) results is more important than the knowledge.

KM practices can lead to a knowing-doing gap (Pfeffer & Sutton, 1999) due to emphasis on technology and codification, treating knowledge as a tangible thing and ignoring the philosophy while concentrating only on the practices. To enable knowledge application the organization should drive out fear and provide an open and caring environment (cf. Edmondson, 2004; von Grogh, 1998 and Pfeffer & Sutton, 1999).

Factors impacting the effective application of knowledge include social networks, culture and information systems (Alavi & Leidner, 2001). Knowledge Management Systems are also informed by the knowledge based view of the firm.

Knowledge Based Theory of the firm

Learning within firms has been a feature of the firm since Cyert and March (1963). Grant (1996) and Kogut and Zander (2003) have proposed a theory of the firm using knowledge as the primary basis. Grant (1996) conceptualizes firms as an institution for integrating knowledge. All production requires the acquisition and integration of knowledge and, according to knowledge based theory of the firm, a firm exists as it is easier to integrate and apply knowledge within the firm rather than across markets. Knowledge acquisition requires specialization but this specialist knowledge has to be integrated with other specialist knowledge to come out with products and services. Moreover, a prominent part of this specialist knowledge is tacit in nature and cannot be transferred easily. There is also the problem of expropriation of explicit knowledge by the potential buyer. Firms arise as a solution to these problems by providing conditions that include *"propinquity and low-powered incentives designed to foster coordination between individual specialists"* (Grant 1996:112). So, Grant (1996) looks at firms as institutions that aid knowledge application by providing coordination mechanisms. He identifies several levels of coordination mechanisms which include: rules and directives, sequencing, routines and group problem solving. Grant also emphasizes the role of common

knowledge in the form of language, other forms of symbolic communication, shared meaning and recognition of individual knowledge domains.

Though Grant *"dispenses with the concept of organizational knowledge in favor of emphasing the role of the individual in creating and storing knowledge"* (1996:112), we observe that what he terms as 'common knowledge' and 'coordination mechanisms' are nothing but manifestations of organizational knowledge. While coordinating the integration of knowledge forms the basis of the knowledge based theory of the firm, researchers differ on the way in which this coordination is achieved depending upon their epistemological stance. Positivist tradition emphasizes the use of knowledge management systems to coordinate knowledge integration and application, the practice tradition like that of Brown and Duguid (1991) stress the role of communities-of-practice in providing common structure and meaning for the transfer of experience. So we argue that knowledge based view of the firm (KBV) literature informs both knowledge management systems and communities-of-practice (covered later in the paper).

Performance Effects

The study of the aspects like the nature of learning process, the factors affecting it, the epistemological stance that underlies it, the intra and inter-organizational processes that characterize different levels of learning, fall under the domain of organization researchers. Their main agenda is to understand the learning process and they are not primarily interested as to how organizational learning directly affects the performance of an organization. That question falls under the domain of strategic management researchers. As the field of organizational learning has contributed much to the field of strategy, this paper on the synthesis of organizational learning literature would be incomplete without covering the strategic implications of organizational learning.

The field of strategic management deals with the question of differential performance of among firms and seeks to explain it. The field has borrowed from several strands of sociology and organizational research in this endeavour. One important literary tradition that they derived upon is that of organizational learning. Mintzberg, Ahlstrand and

Lampel (1998) recognize this contribution of organizational learning to strategy by devoting a separate chapter on learning in their work on the different perspectives that have been used to approach strategic management. Crossan and Bedrow (2003) note that organizational learning research has largely remained disconnected from strategy. But we observe that the link, though not explicit in the earlier period, was definitely there for us to infer and it has been gaining in prominence in the recent period.

We have already noted that organizational learning has been a feature of theory of firm in Cyert and March's (1963) work. The KBV of the firm further develops a theory of the firm primarily using knowledge as the basis of the firm. These works fall under the domain of strategic management deriving from organizational learning literature.

As we noted earlier, the question on cognition-behavior debate with respect to organizational learning has now been more or less settled with a broad consensus that it includes both. The changes in behaviour and the resultant change in performance fall under the domain of strategic management researchers. Even early reviewers like Fiol and Lyles (1985) have hinted the link of learning to strategic management by pointing out that different levels of learning have different impact on the strategic management of the firm. They state that, *"a commonly expressed belief in the strategic management literature is that organizations do learn and adapt and that this enhances the organization's ability to survive"* (Fiol & Lyles 1985:808). The idea of 'experience curve' (BCG 1975) which is based on the premise that the cost of production comes down due to learning effects as cumulative production increases, is one of the important notions that drove the field of strategy practice in the early eighties and later. Dodgson (1993) observes that researchers have looked at the relationship between learning and innovation. Cohen and Levinthal (1990) explain that absorptive capacity affects innovation by influencing expectation formation and the gap between expectation and actual performance.

The growing importance of resource-based-view of strategy (RBV) (Wernerfelt, 1984) and KBV (Grant, 1996) has brought back the focus on learning and knowledge. RBV

theorists argue that differential performance among firms arises due to asymmetric resource endowments that these firms possess and their efforts to keep their resource base rare, valuable, inimitable and non-substitutable (Barney, 1991). Knowledge is increasingly seen as one of the important asymmetric resources that firms possess and organizational learning is seen as the only sustainable competitive advantage (De Guess, 1988). A significant part of all knowledge is tacit in nature and it is difficult to transfer tacit knowledge across firms. Moreover organizational learning is stored in multiple forms like culture, structures and routines (Walsh and Ungson, 1991) which are idiosyncratic to an organization to a great extent. This means that knowledge spillovers across firms is difficult, making organizational knowledge that is tacit in nature and stored in culture, structures and routines a rare, valuable and inimitable resource. Argote and Ingram (2000) note how embedding knowledge in a sub-network involving members minimizes knowledge transfer across firms as it is most difficult to transfer or copy. To the extent that the members inside the same firm are similar in terms of their socialization, knowledge transfer is enhanced within firms and hampered across firms thus leading to competitive advantage. Bontis, Crossan and Hulland (2002) show empirically that stocks of learning at every level – individual, group and organizational – positively affect business performance with the organizational level influencing more than individual and group levels.

Two recent popular strategic frameworks, viz., the core-competency theory of Prahalad and Hamel (1990) and the dynamic capabilities theory (Teece, Pisano and Sheun 1997) have organizational learning as their foundation blocks. In fact, in their re-conceptualization of absorptive capacity (ACAP), Zahra and George (2002) present ACAP as a dynamic capability pertaining to knowledge creation and utilization that enhances a firm's ability to gain and sustain a competitive advantage. They claim that ACAP has two components, each influencing competitive advantage in different ways. Potential ACAP - which includes knowledge acquisition and assimilation capabilities – provides sustainable competitive advantage by providing strategic flexibility in reconfiguring their resource bases and in effectively timing capability development at lower costs. Realized ACAP – which includes knowledge transformation and exploitation

– helps achieve sustained competitive advantage through innovation and product development.

While there is a lot of work on the link between learning and performance, researchers does agree that a knowing-doing gap exists (Pfeffer and Sutton 1999). Researchers have also looked at various factors that moderate the relationship between learning and performance. Todorova and Dirisin (2007) explain that *power relationships* within a firm moderate absorptive capacity, especially in the processes of recognizing value and exploitation. Lawrence, Maus, Dyck and Kleysen (2005) incorporate power into the 4I framework and explain how power relationships determine why some insights are institutionalized while others are not. The *fit between the business model and the knowledge management strategy* is emphasized by Hansen, Nohria and Tierney (1999). They point out that a knowledge management system that is based on codification will be best suited for a business model that is based on 'reuse economics' while those businesses which are based on 'expert economics' should adopt a personalization strategy. Whereas Hansen et al. (1999) talked about the fit between the overall strategy and the knowledge management strategy, Bontis, Crossan and Hulland (2002) stress the importance of managing the fit inside the firm across levels. They show that *misalignment between stocks of learning across levels* negatively affect performance. Garud and Kumaraswamy (2005) advocate a *systemic approach* to knowledge management, dynamically balancing and trading off opposing forces at and across different organizational levels. They argue for a systemic approach to harness knowledge as mutually causal processes have the potential to create both virtual and vicious cycles. Leonard-Barton (1992) also recognizes the dysfunctional flip side of core capabilities. She names this dysfunctional component as *'core rigidities'* and point out that deeply rooted knowledge sets can actively create problems in organizations, hampering innovation. Leonard-Barton (1992) also recognizes *values and norms* as one dimension of capability and that it affects the acquisition and leveraging of capabilities. We have already noted the importance of *social relationships* in the learning process. Szulanski (1996) shows that an arduous relationship between the source and the recipient leads to internal stickiness and hampers transfer of best practices within firms. Another factor that

influences the link between learning, knowledge and performance is the *nature of appropriability regime* that exists in the country. Zahra and George (2002) recognize that the regime of appropriability moderates the relationship between realized ACAP and sustainable competitive advantage and stress the need of isolating mechanisms under weak regimes of appropriability. In another work, McGaughey (2002) proposes how firms can go in for strategic interventions to manage the flows of their intellectual assets under different scenarios. Though it is generally thought that learning leads to sustainable advantage only under conditions of strong appropriability regimes, Cohen and Levinthal (1990) describe how learning can lead to advantage under weak regimes too. They argue that investments in R&D increase the absorptive capacity of an organization which is necessary to take advantage of competitive spillovers that happens in a weak appropriability regime. So, on one hand, the link between ACAP and competitive advantage is weakened by competitive spillovers (Zahra & George 2002), on the other hand the link is strengthened (Cohen & Levinthal 1990). This poses a good empirical question on the extent of each effect which can be an object of future study.

In this section, we synthesized the literature on organizational learning and knowledge management systems that falls under the school that adopts an epistemology of possession. We presented an integrated model of organizational learning, a brief note on organizational memory, knowledge management systems and the performance issues related to organizational knowledge. In the next section, we turn our attention to epistemology of practices.

EPISTEMOLOGY OF PRACTICE - KNOWING

Knowing

The practice-based perspective conceptualizes knowledge not as an object that can be codified, stored and retrieved for future use, but as something that is embedded within and inseparable from practice (Hislop, 2005). Cook and Brown (1999) call this the 'epistemology of practice'. This epistemology derives its roots from the foundational works of researchers like Dewey, Polanyi and Tsoukas. Dewey's view was that learning

takes place through social interaction and yet cannot be passed from person to person as if it were a physical object (Easterby-Smith & Lyles, 2003). Drawing on Dewey's philosophy, Tsoukas (1996) presents a constructionist approach and presents firm as a distributed knowledge system.

Tsoukas (1996) claims that knowledge is essentially distributed in a firm and is inherently incomplete and indeterminate. Propositional type of knowledge (in other words knowledge as a commodity) cannot accommodate knowledge of local conditions of time and space. Knowledge of local conditions of time and space cannot be acquired and retained by a single individual. Such knowledge necessarily exists as dispersed bits of incomplete and contradictory knowledge which all the separate individuals possess. Tsoukas further draws from Polanyi's (1962) notion of tacit knowledge. Polanyi claimed that there is always more to what can be explained and named this residual knowledge 'tacit knowledge'. Polanyi's work is often used to bring out the dichotomy between explicit and tacit knowledge, especially in the works that falls under epistemology of possession. But researchers like Tsoukas (1996) and Brown and Duguid (2001) have argued that this dichotomy is a misreading of Polanyi and claim his work is more towards the practice-based perspective. Tsoukas argues that *"tacit knowledge is a necessary component of all knowledge; it is not made up of discrete beans which may be ground, lost or reconstituted"* (1996: 14). Building on this notion that tacit component is an integral component of all knowledge, he claims that all articulated knowledge is based on an unarticulated background – a set of subsidiary particulars which are tacitly integrated by individuals. The unarticulated background in which the practitioners dwell is known by them through their having been socialized into it by others. Lave and Wenger (1991) used the term *'legitimate peripheral participation' (LPP)* to characterize the process by which people learn and become socialized into being a member of community. Legitimate peripheral participation is the process by which newcomers to a community acquire the knowledge required to be a community member, through gradually increasing levels of participation in community activities, during which time they simultaneously move from being peripheral members of the community to become more central and legitimate members of it. Orlikowski (2002) called this *'knowing in practice'*. According

to Orlikowski (2002) knowledge and practice are reciprocally constitutive and organizational knowing emerges from the ongoing and situated actions of organizational members as they engage the world. Members of an organization work within an organizational context and are involved in discursive practice (Tsoukas, 1996).

Related to this notion of *'discursive practice'* is Brown and Duguid's (1991) conceptualization of an organization as a community-of-communities. Brown and Duguid (ibid) derive from works of Orr (1990) and Lave and Wenger (1990) to present a *'communities-of-practice'* based view learning. Orr (1990) based on his work on Xerox's photocopy repair engineers showed how the actual practice is different from canonical practice and a sense of community and shared identity that existed among these engineers allowed them to develop their knowledge and understanding through solving problems that could not be corrected by simply following the knowledge encoded in instruction manuals. Brown and Duguid (1991) build on Orr's work. They claim learning-in-working is an occupational necessity. It is to be noted that learning-in-working is different from learning by doing (Levitt and March, 1988) in the sense that the former is a philosophical stance that learning is embedded in practice whereas the latter is presented as one of the ways of learning. Story telling, narration, collaboration and social construction forms the basis of actual non-canonical practice that goes on in firms and organizations work and learn through them. Building on Orr and recalling Lave and Wenger's (1990) concept of legitimate peripheral participation, Brown and Duguid (1991) argue that workplace learning is best understood in terms of communities being formed or joined and personal identities being changed. The central issue for them is to become a practitioner and not learning about practice. People work and learn collaboratively and vital interstitial communities get continually formed and reformed. They call these interstitial communities *'communities-of-practice'*. Communities-of-practice are informal groups of people who have some work-related activity in common. They share a common body of knowledge, a sense of shared identity and values (Wenger and Snyder 2000).

Thus the practice-based-perspective of knowledge claims that learning and knowledge are embedded in practice and are socially constructed. Knowledge is multidimensional,

distributed and is inherently indeterminate. This view of knowledge has implications for notions of knowledge management and how knowledge is leveraged for competitive advantage.

Link to Performance – The Knowing perspective

The practice-based-perspective denies the concept of knowledge as a commodity that can be stored in one place and retrieved for future use. So it does not support the idea that the use of centralized knowledge management system can help leverage the knowledge in an organization and lead to competitive advantage. The knowing perspective claims that knowledge sharing or acquisition occurs through 'rich' social integration and immersion in practice – watching and/or doing (Hislop, 2005). Tsoukas states that : *"Given the distributed character of organizational knowledge, the key to achieving coordinated action does not so much depend on those 'higher up' collecting more and more ways knowledge, as on those 'lower down' finding more and more ways of getting connected and interrelating the knowledge each one has"* (1996:22). Hence the focus of an organization should be to facilitate diverse forms of interaction and communication for rich social interaction. Organizations should be cautious that their canonical practices do not come in the way of the emergence and working of interstitial communities that Brown and Duguid (1991) has hinted at.

Popular works on communities-of-practice such as Wenger and Snyder (2000) and on *'learning organization'* by Garvin (1993) and Senge (1990) are based on the practice-based-perspective of knowledge and inform us on the way to leverage knowledge in organizations according to this view. We term the work by Wenger and Snyder (2000) as popular because it does not deal with the philosophical question of the nature of knowledge. Whereas Brown and Duguid (1991) point out the inevitability of the existence of interstitial communities-of-practice due to the very nature of knowledge being embedded in practice, Wenger and Snyder (2000) present communities-of-practice as emergent groups that get formed when certain members who share passion and commitment towards a particular area come together in informal ways and work together. They claim that such communities-of-practice help in solving problems and promote

innovation. Organizations can prosper by identifying such potential communities and providing the required infrastructure to help them flourish. Knowledge management systems such as discussion boards, intranet, groupware and communication technologies (Alavi & Leidner, 2001) can aid in this endeavour. The communities' existing mechanisms for social interaction should be reinforced and they should be given adequate autonomy to allow them to decide and control both what knowledge is important, as well as how it should be organized and shared (Hislop, 2005). Organizations should emphasize practice-based, peer-supported learning methods rather than formalized classroom-based methods and avoid privileging formal objectified knowledge (ibid).

The notion of 'knowing' also has implications for concepts such as 'best practice' and knowledge transfer. The view of knowing means that competence cannot be 'transferred'. Orlikowski (2002) uses the term *'useful practice'*, since for her, the term 'best practice' is problematic. She claims that when practices are defined as situated recurrent activities of human agents, they cannot simply be spread around as if they were fixed and static objects. She advocates that competence generation may rather be seen as a process of developing people's capacity to enact what she calls 'useful practice', with usefulness seen to be a necessarily contextual and provisional aspect of situated organizational activity.

The recent emergence of the concept of *'learning organization'* also falls under the practice based view of knowledge and deals with managerial implications rather than in the theoretical domain (cf. Easterby-Smith and Lyles 2003). A learning organization is an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights (Garvin 1993). The 'learning organization' tradition of literature contributes to the link of knowledge (as in the knowing school) to performance.

Thus we observe that the emphasis in this school of knowing is on the management performing a role of facilitator rather than a controller cum coordinator as it was in the

works that have their epistemologies rooted in the 'possession' perspective. For example, Senge (1990) talks of the new role of the leader as a designer, teacher and steward.

We have summarized our synthesis of the literature under the practice-based-tradition of knowledge in Figure – 3.

Insert Figure 3 about here

CONCLUSION

This paper presented a synthesis of literature in the fields of organizational learning and knowledge management. We recognized that there are two distinct traditions of knowledge that exist in literature and hence we structured our synthesis of these two traditions separately. One purpose of this paper was to provide a better understanding of the similar yet diverse concepts of organizational learning and knowledge management. While doing it, we also noted the tension in literature that exists in the area of cognition-behavior, tacit knowledge-explicit knowledge and knowledge-knowing. We believe that this paper would be a good place for researchers who wish to be exposed to organizational learning and knowledge management and also for the experts in the area in the form of a refresher. We have also tried to delineate the domains of organizational learning, knowledge management and strategic management, though such an delineation is very difficult and is fraught with disputes. The key contribution of this paper would be the presentation of our integrated process model of organizational learning where we have attempted to synthesize the works of Kolb (1993), Crossan et al. (1999) and Nonaka (1994). This is only an initial attempt and further refining of the model is possible. We have seen that various factors affect the organizational learning process and the importance of organizational learning to strategic goals and outcomes. We have pointed out potential research areas as part of our synthesis itself and hence do not dedicate a separate section to it.

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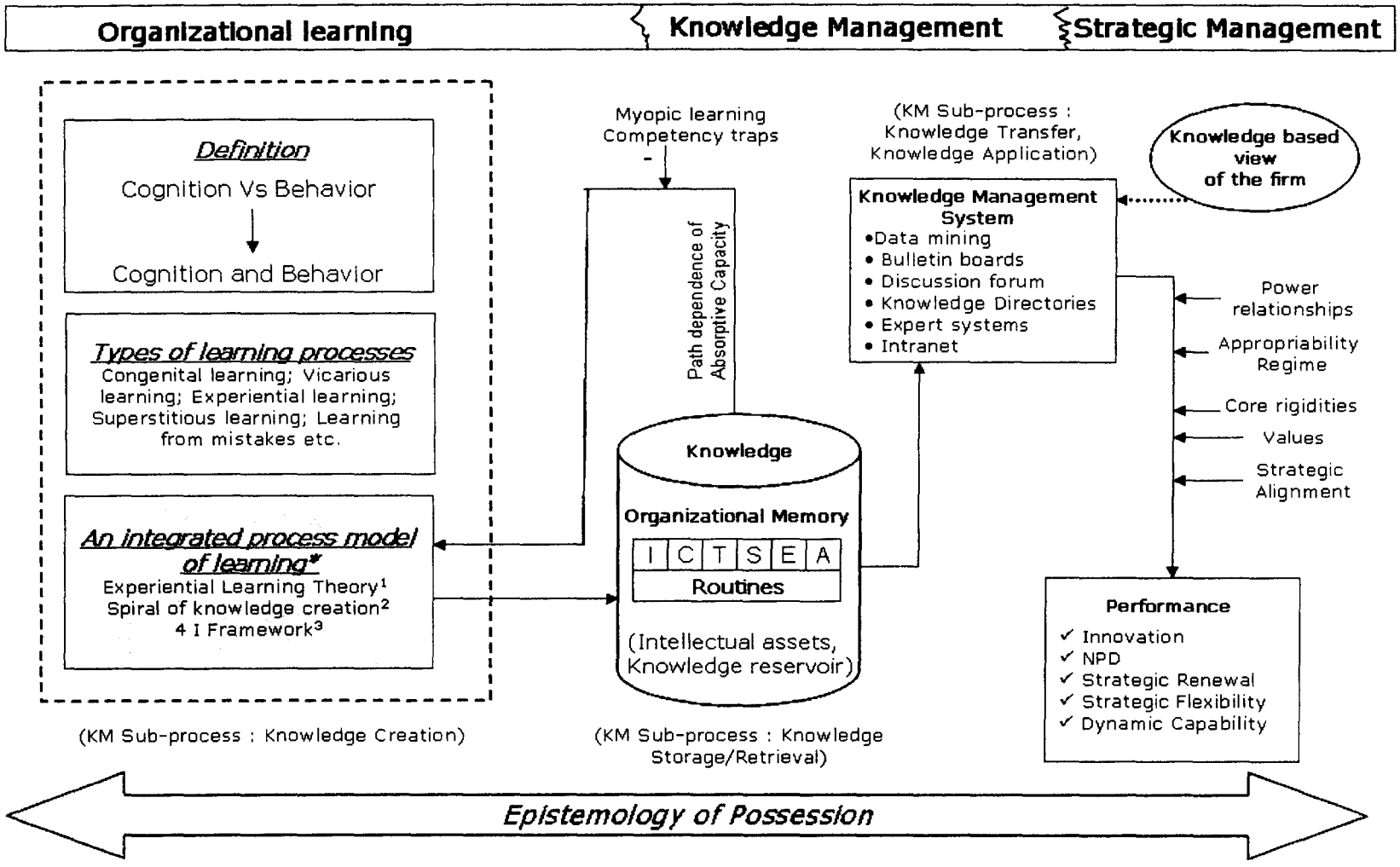

(See Figure 2 for details; [1] – Kolb (1987); [2] – Nonaka (1994); [3] – Crossan, Lane & White (1999); I – Individual; C – Culture; T – Transformation; S – Structure; E – Ecology; A – External Archives)*

Figure 1: A synthesis of OL & KM literature – Epistemology of Possession

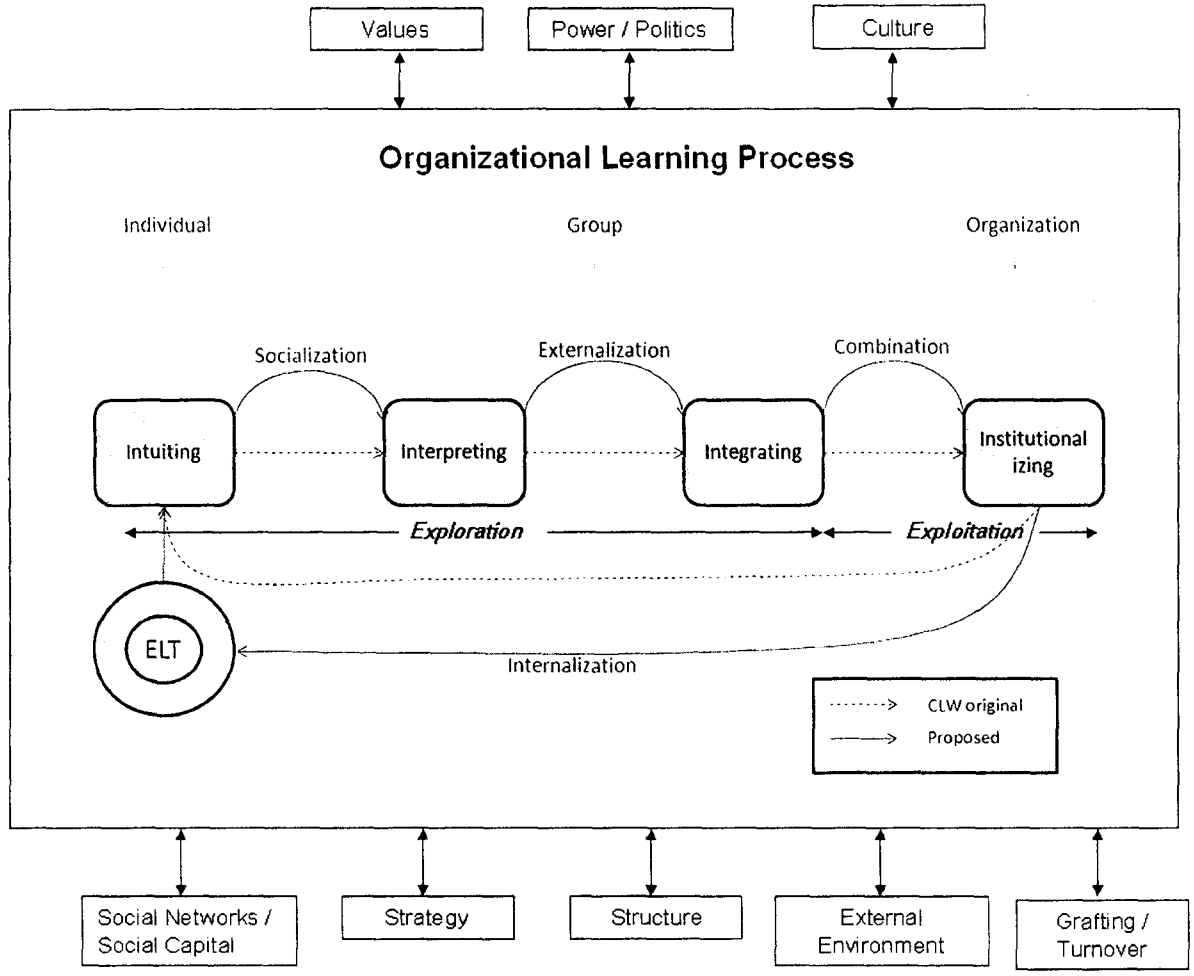

Figure 2: An integrated process model of organizational learning – A synthesis of Crossan, Lane & White (1999), Nonaka (1994) and Kolb (1993)

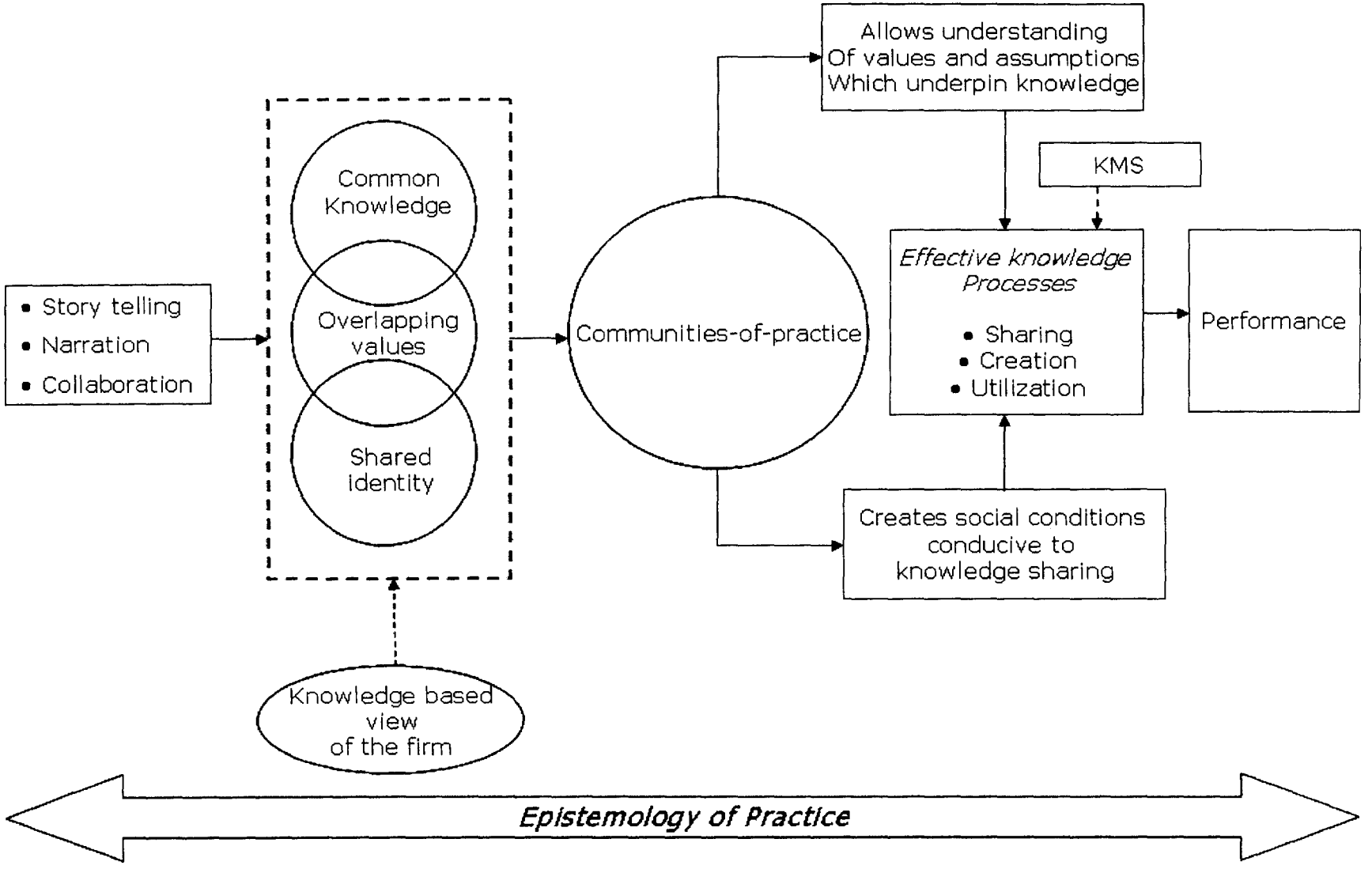

Figure 3: A synthesis of OL & KM literature – Epistemology of Practice [Adapted from Hislop (2005)]