Catching the chameleon: understanding the elusive term “knowledge”

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Abstract
Purpose – To examine the various discourses on “knowledge” and to understand what knowledge means – is it a process of leveraging resources, is it a resource, or is it both – a process and a resource? Further, the purpose of the paper is to propose a framework for knowledge management.

Design/methodology/approach – The literature on “knowledge” is reviewed and “knowledge” is analyzed along the epistemological dimensions. The synthesis seeks to integrate the disparate ways in which “knowledge” has been conceptualized in the management literature.

Findings – The framework on knowledge management recognizes and establishes linkages between both attributes of knowledge – knowledge as a process and as a resource. It recognizes knowledge as an input resource (“knowledge of”), knowledge as an output resource (“knowledge from”), and knowledge as a process linking the “knowledge of” to the “knowledge from”.

Practical implications – A very useful source for practitioners and students interested in the field of knowledge management.

Originality/value – This paper is among the early works to organize the literature and to clarify the alternative thoughts that exist towards defining knowledge. The framework offers the literature in a very understandable and usable form for all those who are centrally or peripherally related to knowledge management.

Keywords Epistemology, Process analysis, Resource management, Knowledge management

Paper type Conceptual paper

Knowledge, knowing and organizations: an introduction

“Knowledge” is increasingly recognized as being of central importance to organizations in the contemporary knowledge society. Changes in the workings of capitalism, the advent of advanced communication technologies, the complexity of social and cultural changes, the shrinking of the world due to increasing globalization, intensifying competition – all these factors and more point towards an increasing need for placing “knowledge” at the center of the philosophy of the contemporary knowledge society (Blackler et al., 1993; Badaracco, 1991).

Indeed, “knowledge” has been the focus of inquiry within the rubric of philosophical and epistemological literature for a long time and has intrigued the world’s greatest thinkers from Plato to Popper. But its importance within the management domain has only been realized in the contemporary “post-industrial” society (Bell, 1973; Drucker, 1993). The rapid proliferation of this term across journals, conferences, managers’ and governments’ agendas points towards the increasing interest of academics, practitioners, and policy makers in “knowledge” as a source of economic rent and as a source of sustained development.

Considered as both, a cause and a cure for competition, the management literature sans doute has seen a recent surge of academic writings to explore and unpack “knowledge” as a construct. This construct has been probed by scholars with perspectives as varied as – symbolic interactionism, post-modernism, economics, resource-based theory, evolutionary theory, innovation and organizational learning, and sociology. “Knowledge”, thus, means...
different things when viewed from different perspectives. Even within management literature, alternative thoughts exist as to what knowledge means – is it a process of leveraging resources for organizational learning or innovation; is it a resource – a form of capital (other forms of capital being land, labor, and financial); or is it both – a process and a resource? If it is a resource, then is it an input resource (human capital, information technology, know-how, etc.); is it an output resource (new knowledge created as intellectual capital, new learning, product and/or process innovations, etc); or is it both? Many such questions abound with the term itself, and the different ways that different scholars have conceptualized it[1].

This paper reviews the literature on “knowledge” in an attempt to understand the various discourses on “knowledge”. This paper seeks to build a framework that integrates the disparate ways in which “knowledge” has been conceptualized in the management literature. The framework recognizes both attributes of knowledge – knowledge as a process and knowledge as a resource. Further, the paper establishes linkages between these two attributes. The central idea of this research paper is that “knowledge” can be viewed as an input resource, an output resource and/or as a process. Knowledge as an input resource may exist at the individual level, at the collective level, at the physical artifact level, at the firm level, and at the inter-organizational level. In other words, I call this knowledge “knowledge of” the firm. Knowledge as an output resource is exemplified by the new knowledge created in the form of innovations and organizational learning. In other words, I call this knowledge “knowledge from” the firm. And knowledge as a process is seen as a process of leveraging the firm resources for generating economic rents and for innovations, or in other words it is the process of leveraging “knowledge of” to generate “knowledge from” the firm. Knowledge management, thus, is the management of this process from “knowledge of” to “knowledge from”.

Theoretical reflections

To understand this term, it is necessary to explore and analyze the debates that have centered around this term called as “knowledge”. For example, post-modernists have challenged knowledge as a “fundamental truth”. They argue that narratives and story-telling, for example, are the chief means for sustaining, transferring and creating organizational knowledge, and knowledge (of the organization) is revealed through such mechanisms. Narratives, as organizational stories, thus constitute a critical unit of analysis for organizational scholars.

Cognitive anthropologists, ethnomethodologists, symbolic interactionists and structuralists have demonstrated the significance of situated skills and pragmatic knowledge. Following Strauss, these scholars propose that the organization is a negotiated order – an order that is negotiated both temporally and locally. This stream of research views learning as social construction and thus puts knowledge back into contexts in which it has meaning (Lave and Wenger, 1990; Brown and Duguid, 1991; and Tyre and von Hippel, 1997). From this perspective, learning or knowledge creation is physically and socially situated in practice. Indeed these scholars reject the transfer models transmitting explicit, abstract knowledge from the head of someone to another who is in a completely different setting. Thus, for these scholars what is learned:

- is profoundly connected to the conditions (social and physical) in which it is learned; and
- is connected to the practice (not to the abstract, cranial process alone).

In a similar vein to the situated theorists, pragmatist philosophers (Dewey, 1938) have also argued that truth and knowledge are contingent, multiple and all representations of truth and knowledge are incomplete and self-referential. All representations are endowed with the viewpoint of subject/author, who in turn is situated within her/his personal experience, which is a temporal intersection of historical, institutional, national, and international actions and events. Different perspectives are born of different experiences. Thus, truth and knowledge claims are relative matters, are malleable and dynamic and are realized in their consequences. The pragmatist perspective suggests a concern not with “knowledge”
itself (which is seen as abstract and static), but with the activity of knowing (which is understood as concrete and dynamic). Thus, if we wish to know what an engineer knows, we as pragmatist philosophers need to look at what the engineer does and how he does his or her work. Knowing, as Dewey suggests, is literally something that we do and not something that we possess.

Sociologists of science (e.g. Latour, 1987) have challenged the prominence and the privileged status of explicit, abstract, objectified knowledge by studying knowledge creation as a cultural process and by de-emphasizing conventional distinctions between humans and non-humans (technology, physical artifacts, etc). This stream of research argues that humans and non-humans (because technologies themselves are human constructions) interactively (re) construct the social and the natural world.

Economists have viewed knowledge as commodified in patents or industrial secrets. In 1988, Winter proposed that knowledge and competence are strategic assets for the success of the organization. Viewing knowledge as commodified in products, systems or services, Winter proposed that protection against involuntary knowledge transfer may be achieved by developing process knowledge (i.e. by compartmentalizing knowledge), by controlling observability and reverse engineering, and by patenting. By drawing taxonomic dimensions of knowledge, the paper clarifies some conceptual issues confronting the complexities in the usage of the term “knowledge”. Economists have also analyzed the role that knowledge plays in economic processes. Romer (1986) has analyzed the interrelations between knowledge and traditional economic variables. His work presents a fully specified model of long run growth in which knowledge is assumed to be an input in production that has increasing marginal productivity. Thus from Romer’s perspective, knowledge has increasing returns, it renders limitless services, and it follows the path contrary to the law of diminishing marginal utility.

Within the corporate strategy and organizational theory literature, knowledge-based perspectives conceptualize the firm as a heterogeneous, knowledge-bearing entity (Grant, 1996a; Kogut and Zander, 1992; Conner and Prahalad, 1996). Key words within this perspective are “resources”, “capabilities”, “competencies”, “learning”, “social knowledge”, “tacit knowledge”, and “intangible assets”. The central theme emerging in this literature is that knowledge is a key source of rent for organizations to achieve competitive advantage. Thus, it is not only the tangible resources that the firm possesses, but also how these resources are leveraged that is of central managerial importance. In this sense, the knowledge-based perspective is complementary to the resource based theory (Wernerfelt, 1984; Barney, 1991) of the firm. The focus on the amplifying effects of the intangible firm-specific knowledge that the firm members apply to the tangible production factors parallels the Penrosian view. Penrose (1959) distinguished the firm’s tangible resources from the services these resources provide. She argued that while the former are finite, the latter are mediated by the infinite and endlessly extensible body of managerial knowledge. The theme on knowledge-based perspective entails a focus on both these questions: “what is the source of competitive advantage” and “how to build and sustain competitive advantage”. It is thus argued that the presence of knowledge itself and the process of utilization of knowledge to create knowledge in organizations may be the key inimitable resource to generate sustainable rents. Thus, this perspective enlightens us not only on why some firms realize competitive advantage while others do not, it also helps address issues concerning innovation, organizational learning, and inter-organizational arrangements (Grant and Baden-Fuller, 1995). In fact, some scholars (Kogut and Zander,
1996; Conner and Prahalad, 1996) have proposed “knowledge” as the basis for the existence of the firm and have thus offered the knowledge-based view of the firm as an alternate to the transaction-cost view to explain the firm’s existence.

Given the multiplicity of these scholarly advancements, the question that arises is “what exactly constitutes knowledge within the firm”. Drucker (1993) contended that in the current knowledge economy, knowledge is being applied to knowledge itself for generating knowledge. Such a simplistic characterization indicates that just about everything that describes a firm becomes an aspect of its knowledge. Indeed, as Blackler (1995) argues, any discussion of knowledge within organizations must address all individuals in the organization, and must indicate that all individuals and all organizations are knowledgeable. The theoretical challenge then is “to understand the knowledge base of the firm as leading to a set of capabilities that enhances the chances for growth and survival” (Kogut and Zander, 1992 p. 384). A simple look at the various definitions of “knowledge” indicates the multiple discourses on firm “knowledge”. For example:

- Knowledge of the firm is “what the firm knows how to organize social relationships/principles”. It is embedded in the organizing of the social relationships and is relatively observable as opposed to organizational learning (Kogut and Zander, 1992, 1996).
- Knowledge resides in the head of the individuals . . . knowledge is that which is known . . . (Grant, 1996a).
- Knowledge is defined as information whose validity has been established through the tests of proof . . . (Liebeskind, 1996).
- Knowledge is justified true belief . . . (Nonaka, 1994).
- Knowledge is what the firm knows in term of best practices . . . (Szulanski, 1996).
- What we know = knowledge we possess + knowledge in action . . . (Cook and Brown, 1999; Nahapiet and Ghoshal, 1998).
- Knowledge is emergent, is partial, tentative, distributed . . . (Tsoukas, 1996; Blackler, 1995; Blackler et al., 1993).

“Knowledge” clearly means different things to different scholars. Simply defining knowledge is not sufficient to understand the complex, multi-faceted and multi-dimensional aspects of “knowledge”.

Developing a framework for knowledge management

A review of the literature along the epistemological dimensions[2] does however permit one to discern two broad perspectives[3] into which most writing can be classed. In the first perspective, knowledge is viewed as a resource that can be possessed or even created by actors and/or the networks in which they participate. In the second, knowledge is viewed as a process of doing – of knowing how to leverage and how to mediate the relationship between the possession and the creation dimension.

1. Epistemology of possession: i.e. knowledge as something that is possessed by the firm.
   Firm knowledge (as possessed) by the firm is demonstrated by both:
   - something that the firm has (resource/asset) or in other words, as knowledge “of” the firm; and
   - something that the firm generates (new knowledge created) and possesses thereafter as learning or innovation, or in other words, as knowledge “from” the firm.

2. Epistemology of action/process: i.e. knowledge as a dynamic process (see Figures 1 and 2).

The possession/creation perspective: epistemology of possession

Researchers adopting this stance offer evidence that knowledge exists by pointing to resources that are possessed by actors – “knowledge of” such as explicit or tacit understandings and intellectual capital (Prahalad and Hamel, 1990; Kogut and Zander, 1992). Other researchers who adopt this perspective view knowledge as something that is created by actors – “knowledge from” e.g. new ideas, innovations and learning – by the rearrangement of the repository that is possessed by actors (Penrose, 1959; Nonaka, 1994).
Knowledge as something that the firm possesses as a resource/asset – "Knowledge of" the firm. Drawing from the resource-based view of the firm, knowledge is arguably the most important asset that the firm possesses i.e. it is the key source of rents since the presence or lack of knowledge allows the firm to be more or less productive. Knowledge is considered as the most important strategic factor as compared to the other traditional factors of production like land, labor, and financial capital.

Firm knowledge may exist as know-how (tacit knowledge) and/or know-what (explicit knowledge). “Know-how” is understood as the procedural knowledge, or as knowledge of acquaintance; and “know-what” as declarative knowledge or knowledge about (i.e. knowledge about “what works”). This distinction becomes clearer through Polanyi’s work on “tacit knowledge” and “explicit knowledge” (Polanyi, 1966). Explicit or codified knowledge
refers to knowledge that is transmittable in formal, systematic language. On the other hand, tacit knowledge has a personal quality, which makes it hard to formalize and communicate. It is deeply rooted in action, commitment and involvement in a specific context. Emphasizing that much of knowledge is tacit, Polanyi said “we know more than we can tell” and tacit knowledge thus only represents the tip of the iceberg. Tacit knowledge may be a source for sustainable competitive advantage since it cannot be replicated or imitated by other firms (Winter, 1988). However the characteristic of incommunicability of tacit knowledge also poses a problem for the firms to transfer knowledge to their own sub-units/subsidiaries/partners. This tension between imitation versus embeddedness of knowledge is empirically captured in a study by Zander and Kogut (1995). A close reading of Polanyi suggests that some knowledge will always remain tacit. In so doing, he stresses the importance of knowing as well as knowledge. Some others also reject the categorization of knowledge into distinct types and instead suggest that there exists a continuum between explicit and tacit knowledge. Thus, knowledge can be more/less tacit or can be more/less explicit, but may not be either fully explicit or fully tacit (Winter, 1988; Tsoukas, 1996).

Patent citations, documents, and other human artifacts are used as proxies for explicit knowledge that is codified and documented knowledge. Empirical studies have been conducted using patent citation as the data source (Mowery et al., 1996; Almeida, 1996). Codifiable knowledge may also be chunked into domains or archives (Anand et al., 1998; Walsh and Ungson, 1991). The knowledge may be retained, stored and maintained in directories. The directories may either be individual cognition-based or technology-based.

Psychological and cognitive models have also been important in understanding especially the tacit dimensions of knowledge. That firms know what/how to do, and that firms differ from each other in what/how they do are intimately linked to the issue of human cognition within the firm. The work on managerial and organizational cognition studies the mental templates or the knowledge structures of the individuals and the connections between them (Walsh, 1995). Connectivity between these individual cognitive models in the firm is crucial to what firm knows and how they act upon what they know. It is this connectivity that explains how new structures are formed (Weick and Roberts, 1993; Dougherty, 1992). The ability to recognize and appreciate the different perspectives within and between the communities of knowing is crucial to the capability of firms (especially knowledge-intensive firms) to create innovative products/services (Boland and Tenkasi, 1995). Boland and Tenkasi (1995) propose that perspective-making and perspective-taking within and between communities of knowing are achieved by narrating one’s experiences (narrative mode of cognition) as well as by rationally analyzing the experiences (paradigmatic mode of cognition).

At the firm level, what the firms know and how they do is also understood under the rubric of organizational capabilities. Knowledge of the firm as demonstrated by organizational capabilities is the central argument of many research works (Henderson and Clark, 1990; Leonard-Barton, 1992; Prahalad and Hamel, 1990; Kusunoki et al., 1998). 3M, Chaparral, etc. are examples of organizations whose organizational capabilities lie in harnessing their well-springs of knowledge (Leonard-Barton, 1995). For Chaparral, for example, every single employee is considered to be a source of knowledge and the organization makes every effort to promote, encourage, integrate, and utilize this knowledge to create innovative products/services. Similarly, 3M has its competencies in its different lines of business, but its capabilities yield from its knowledge to combine its competencies in innovative ways. Kusunoki et al. (1998) in a recent empirical study propose that knowledge may be evidenced:

- as local capabilities;
- as architectural capabilities; and
- as process capabilities.
As local capabilities, knowledge may be recognized in the individual units, for example, in a specific group of engineers, in elemental technologies, in patents, databases, etc. As architectural capabilities, knowledge of the firm is represented in the linkages between the individual units of knowledge (this notion is similar to Henderson and Clark’s work on architectural innovation). As process capabilities, knowledge of the firm is demonstrated by the dynamic interactions in these linkages. Typical examples include communication and co-ordination across different functional groups (Leonard-Barton, 1992; Prahalad and Hamel, 1990). Thus, for example, 3M’s local capabilities lie in the individual lines of business (knowledge base), its architectural capabilities lie in the linkages between its different lines of business (knowledge frame), and its process capabilities lie in the dynamic interactions in these linkages. It is these linkages and the dynamic interactions between the individual knowledge bases that yield resource re-combinations which are a source of Schumpeterian innovation and thus of higher rents (Galunic and Rodan, 1998).

The knowledge that the firm possesses may be local or foreign to the firm. Firms may possess knowledge that is locally available to them for example, local institutions, local markets, local distribution channels, sales forces, local plants, market intelligence, cultural traditions, norms, values, etc (Inkpen and Beamish, 1997). To establish an operational presence in a country, a firm must access local knowledge as a means of overcoming market uncertainties. Firms may also wish to learn and internalize the knowledge base that is foreign to their own local knowledge base (e.g. technologies, practices, skills, information, know-how) or may seek to internationalize their local knowledge bases. The need for complementing the local and the foreign knowledge bases and the need to access local/foreign knowledge bases accentuates the need for collaborative inter-organizational arrangements (Grant and Baden-Fuller, 1995; Inkpen and Beamish, 1997; Hamel, 1991).

Knowledge as something that the firm generates/creates – Knowledge “from”: The firm is not a passive repository of knowledge. Multiple knowledge (bases) of the firm interact and recombine with each other with varying intensity (the tacit knowledge of the collective in the form of organizational culture may interact with the explicit knowledge of the individual), get “converted” from one form to the other (e.g. the tacit knowledge gets converted into the explicit form through the process of externalization . . . (Nonaka, 1994)), and mobilize, recombine and transform the resources of the firm so as to add value to these resources (Galunic and Rodan, 1998). What results from these re-combinations and conversions is the new knowledge (tacit and explicit both) – either as new learning (individual, collective, or organizational learning) and/or as innovations (Nonaka, 1994; Nahapiet and Ghoshal, 1998; Galunic and Rodan, 1998).

For both, Schumpeter and Penrose, the reconceptualizations of the existing system with arrangements of different permutations and re-combinations, that were ‘previously unevised’, result in innovations. A firm is an appropriate vehicle for such innovations, given the cognitive existence of the boundary limits of the firm, the ease of communication and co-ordination, and the cognitive recognition of a particular identity which enhance the probability of the generation of a social community in the firm (Kogut and Zander, 1992, 1996; Nahapiet and Ghoshal, 1998).

Nonaka (1994), in his seminal article on “organizational knowledge creation” proposes a spiral between the ontological and epistemological dimensions of knowledge in terms of a continual dialogue between tacit and explicit knowledge for creating organizational knowledge. Learning, as also innovation (product, technical, and strategic/organizational) is the culmination of the interplay between tacit and explicit knowledge of the individuals. Learning and innovation of an individual’s knowledge gets amplified and enlarged into new organizational knowledge. Thus, in the framework of my proposed schemata here, Nonaka’s model proposes knowledge (tacit and explicit) as the “knowledge of” the firm. The new (tacit and explicit) knowledge created in the form of “knowledge from” the firm is exemplified as learning and innovation. This “knowledge from” feeds back into “knowledge of” the firm to become the new knowledge base of the firm. New knowledge is created by articulating and sharing knowledge through dialogue and metaphors within self-organizing teams. “Creative
“chaos”, “redundancy”, and “requisite variety of information processing channels” are organization-wide mechanisms that enable this process of knowledge creation.

Increasingly, the special capabilities of organizations for sharing, transferring and creating knowledge are being identified as central to achieving organizational advantage (Nahapiet and Ghoshal, 1998). Scholars in this stream thus probe deeper to explain what enables the firm to transfer knowledge and create new knowledge. Firms may create knowledge through the interplay between the tacit and the explicit dimensions of knowledge. Nahapiet and Ghoshal (1998) propose that what enables this interplay and the transfer of these knowledge dimensions for new knowledge creation is the social capital of the firm. Defining the intellectual capital as the knowledge and the knowing capability of the collective, Nahapiet and Ghoshal propose that the processes of combination and exchange of existing firm knowledge (“knowledge of”) are the key mechanisms for the creation of intellectual capital (“knowledge from”). The three dimensions of social capital — structural (network ties, network configurations, and appropriable organization), cognitive (shared codes and language, shared narratives), and relational (trust, norms, obligations, and identification) — mediated by certain conditions for the combination and exchange of existing knowledge — create new intellectual capital. Based on Nahapiet and Ghoshal’s conceptual framework, Tsai and Ghoshal (1998) conducted an empirical study to examine the relationship between social capital and product innovation. They found that the social interaction and trustworthiness between individuals affected product innovations through patterns of resource exchange and combination.

International joint ventures are increasingly important as the way of creating knowledge inter-organizationally (Hamel, 1991; Grant and Baden-Fuller, 1995; Inkpen and Beamish, 1997; Inkpen and Dinur, 1998). Organizations form inter-organizational arrangements when the knowledge domain of one partner firm overlaps the product domain of the other partner firm (Grant and Baden-Fuller, 1995) and through such arrangements the partners learn (Hamel, 1991; Lam, 1997; Inkpen and Beamish, 1997; Inkpen and Dinur, 1998). Inkpen and Dinur (1998), in a theory building research, explore how partner organizations in a joint venture acquire and manage new knowledge, and hence learn. Based on a longitudinal case study, the key findings of the research suggest that different processes of knowledge transfer yield difference in the effectiveness of new knowledge acquired. That is, personnel transfers and strategic integration between partner firms potentially allow the largest amounts of knowledge to travel inter-organizationally, resulting in largest amounts of new knowledge acquired. Thus, according to my schemata, the new knowledge acquired symbolizes the “knowledge from” the inter-organizational arrangement.

The process perspective: epistemology of action – from “knowledge of” to “knowledge from”

Scholars in this perspective focus on the process of “practice” (Cook and Brown, 1999), of “leveraging resources” (Penrose, 1959), of “doing” (Blackler, 1995). Indeed, it is precisely this form of knowledge, as a process, that appears to mediate the relationship between the other two forms; processes determine if and how knowledge “of” is harnessed to generate knowledge “from”. Thus, different firms may have the same knowledge bases (“knowledge of”), but each of these firms may create new, but different, knowledge bases (may learn different things, may innovate different products/services, may learn more or less than the other firms).

It is this process or activity that Spender (1996), à la Penrose, defines as the knowledge of the firm. Moving away from the idea of knowledge as a kind of an economic asset or commodity, whether explicit or tacit, individual or collective, Spender proposes knowledge as the skilled process of leveraging resources, where that knowledge is permanently embedded in that organization (Spender, 1996, p. 54). He treats the firm as a system of knowing activity rather than a system of applied abstract knowledge. His theory helps to see, for example, how the systemic (e.g. collective background knowledge) and the componental elements (e.g. individual creativity) of a firm interact with each other to give a distinct meaning and identity to the firm. Firm knowledge is thus understood as emergent, evolving, and dynamic and knowledge of the firm is what the firm does and how it does it.
this process that distinguishes one firm from the other and which accounts for the difference in the performance of different firms.

In a similar vein, Blackler (1995) argues that “rather than regarding knowledge as something that people have, it is suggested that knowing is better regarded as something that people do”. Such an approach, he argues, draws attention to the need to research ways in which systems that mediate knowledge and action are changing and might be managed. The focus thus shifts from questions such as “what sorts of knowledge are needed in contemporary capitalism and how may organizations harness them?”, to questions such as “how are systems of knowing and doing changing, and what responses would be appropriate?”. From this perspective, knowing is a mediated, situated, provisional, pragmatic, and a contested phenomenon, essential to which is “language” and “talk” that enables collective interpretations and creates a community.

Epistemology of possession (e.g. tacit, explicit, individual, and collective) does not capture all forms of knowledge that enable people to know (Cook and Brown, 1999). People also know through the actual act of doing. In an example that Cook and Brown cite, the act of riding the bicycle itself does distinct epistemological work of its own. Thus, what gets added to the old knowledge of riding the bicycle in order for the new knowledge of riding to be acquired is the actual act of riding.

The focus in this perspective has been on the process of “practice”, of “leveraging resources”, of “doing” – a process that takes the “knowledge of” the firm to the “knowledge from” the firm. Why firms differ in their “knowledge from”, even though they may have the same “knowledge of”, is because of what firms do. Blackler calls for the need to identify and focus on the “culturally located systems through which people achieve their knowing, on the changes that are occurring within such systems, and on the processes through which new knowledge may be generated” (Blackler, 1995, p. 1021).

Integral to this process (of practice, of leveraging resources and of doing) is the sharing and exchange of knowledge and this is receiving increased attention in the academic and practitioner literature (Blackler, 1995; Penrose, 1959; Nahapiet and Ghoshal, 1998; Spender, 1996; Galunic and Rodan, 1998). The exchange and subsequently the combination of knowledge are essential activities that enable the creation of new knowledge (Nahapiet and Ghoshal, 1998; Kogut and Zander, 1992; Grant, 1996b). In his process model for explaining how knowledge gets created, Nonaka (1994) presented a model where knowledge is created through an interplay of externalization, internalization, socialization and combination of knowledge. Integrating or combining the knowledge units is the basis for generating organizational capability (Kogut and Zander, 1992) and one way knowledge combination is facilitated is through routines and directions (Grant, 1996b). A set of higher order organizing principles such as shared identity (Kogut and Zander, 1996), and social capital (Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998) in the organization also facilitate the exchange, combination and creation of knowledge. New knowledge that is created may appear in the form of new product, new process, new strategic and/or new organizational innovation (Nonaka, 1994) or may simply appear as new learning (Kogut and Zander, 1992, Nahapiet and Ghoshal, 1998) in the organization. In other words, exchange and combination of knowledge have been viewed as generic processes that create new knowledge. The research on knowledge sharing demonstrates that the processes of exchange are influenced by the social (Szulanski, 1996), cognitive (Cohen and Levinthal, 1990; Weick and Roberts, 1993), organizational (Kim and Mauborgne, 1998) and physical contexts (Tyre and von Hippel, 1997; Madhavan and Grover, 1998) in which the actors are situated.
Implications for managerial practice

Based on the review of the literature, the following discussion outlines some implications for managerial practice.

Globalization and knowledge

Increasingly, organizations are crossing borders, and increasingly multinationals are being viewed as a network of relationships, of capabilities and repositories of knowledge. “Connecting” the “dispersed” organization and managing the exchange of knowledge in such organizations is an important agenda for managers. The research on knowledge exchange has demonstrated that the processes of exchange are influenced by the social (Szulanski, 1996), cognitive (Cohen and Levinthal, 1990; Weick and Roberts, 1993), and organizational (Kim and Mauborgne, 1998) factors. In addition to these factors, contextual factors also impinge on the efficacy of knowledge exchange. The stream of research on contextual embeddedness has revealed that the physical settings and the artifacts influence the efficacy of the sharing of knowledge (Tyre and von Hippel, 1997) by influencing and shaping the cognition of individuals in that particular context (Madhavan and Grover, 1998). Different societal and institutional contexts also shape and structure the knowledge systems of the individuals differently (Lam, 1997; Kostova, 1999). In essence this stream of research has offered evidence that the incommensurability of contexts – physical and societal – hinder the exchange of knowledge across (departmental, firm, geographic, cultural) boundaries.

Interestingly while on the one hand the literature demonstrates the factors that hinder knowledge work across different contexts and boundaries, on the other hand we are witnessing a steep rise in dispersed knowledge work (Cohen and Mankin, 1999; Rae, 1998). Little understanding exists of how geographically dispersed members – that do not share a common physical context, and in many cases, may not even share a common organizational, cognitive, social, and societal context – exchange knowledge with other physically distant members to generate new insights and to learn.

One way to focus on this area may be an examination of the virtual communities-of-practice across the dispersed organization. Although, the electronic commerce is on an increase now, many of the ideas about knowledge management that exist today were developed in the pre-internet (and intranet) era. While it is apparent that the emergence of the electronic commerce is changing the knowledge management techniques firms are using, we still have very limited understanding of what those changes are.

Temporality and knowledge

Temporality of personnel (contingent workers) and the temporality of work (in terms of projects) is also increasingly becoming an integral part of the contemporary economy. Contingent workforce consists of independent contractors, individuals brought in through employment agencies, and workers on site whose services are provided by contract firms, such as out-sourced information technology workers (Matusik and Hill, 1998). Thus, the social collective of the firm (“knowledge of”) is transient and temporary, and is comprised of both, the traditional (permanent) and contingent (temporary) workers. The most significant impact of contingent work may be on the knowledge accumulation, creation and knowledge dissemination activities of the firm. This workforce is a good vehicle for knowledge accumulation and creation in the firm hiring them. But, this workforce may also be a vehicle for the leakage and dissemination of proprietary knowledge of the firm that has hired them, thus draining the firm of its competitive advantage. Matusik and Hill (1998) and Matusik (1999) have argued for these twin issues. The agenda for the firm thus is to maximize knowledge accumulation and creation activities and to minimize knowledge dissemination activities.

Strategies aimed towards this agenda may yield a competitive advantage to the firm. What is also important to understand is the interaction between the traditional workers and the contingent employees and the effect this interaction might have on the knowledge transfer and creation activities. This interaction needs considerable theoretical and practical exploration and attention. Managerial efforts towards balancing the somewhat different needs and expectations of contingent and traditional workers can make a huge impact on the commitment
of these workers, and thus to their knowledge sharing, transfer, and creation efforts. Increasingly firms, especially the hi-tech and software firms, are hiring the contingent workers not only in the peripheral activities, but also in the core value creation activities. It is important for the firm (that hires a contingent worker) to develop a conducive organizational context that may stimulate a community-of-practice between the traditional and the contingent worker for maximal sharing, transferring and creating knowledge. This may help the traditional worker to learn from the contingent worker, but may also adversely expose all the organizational knowledge to the contingent worker. So far as the knowledge is implicit, embedded and complex, its exposure would not damage much. But, revealing codified, explicit knowledge may be damaging and may also drain the firm from its competitive advantage.

Given its vital role in the economy, firms need to leverage knowledge to generate rents for the firm. Thus to start with, managers would need to identify the knowledge base of their firm and thereafter use mechanisms to leverage it. Each firm is idiosyncratic, therefore using a single “recipe” (Spender, 1989) for leveraging resources may not be applicable to all firms. In addition to identifying, managers would need to attend to mechanisms for leveraging this knowledge for innovation, organizational learning and thus for growth. Organizing knowledge by building compatible organizational and technological architectures that respond to and enhance the social production of knowledge is a central task for managers.

Concluding note

Although “knowledge” has emerged as a central theme in strategy and organizational research, there seems to be a lack of consensus as to what constitutes knowledge, where it resides, how it is, or should be, created. This is unsurprising: questions related to the essence of knowledge have intrigued and occupied most of those individuals currently heralded as the world’s greatest thinkers, from Plato to Popper. It is difficult to imagine how the efforts of organizational scientists, as earnest and informed as they may be, could have quickly settled such long-standing debates. Thus, despite advances in scholarly work, alternative thoughts exist as to what knowledge means.

The central purpose of this paper was thus to review the literature on “firm knowledge”, to capture the different conceptualizations of firm knowledge and to present these in a coherent framework. The review generated two perspectives into which most writing on “knowledge” can be classed, thus acknowledging the resource (“knowledge of” and “knowledge from”) and the process attributes of knowledge. The sharing and exchange of knowledge are integral for leveraging the “knowledge of” the firm in order to generate the “knowledge from” the firm. Firms need not only to recognize their knowledge base, but they also need to leverage this knowledge base for continual growth through innovation and learning.

Notes

1. Richard Rorty (1989) suggested that the places where the cracks are most visible are the growing places in research (as stated in Law, 1990)

2. Questions about “what is regarded as the evidence of things in the social world” or simply about “what we know” are epistemological questions (Mason, 1996).

3. The categorization of knowledge into these two epistemology types is partly influenced by Cook and Brown’s work (1999).
References


Further reading


