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Research Article

Objectivity and Subjectivity in Knowledge Management: A Review of 20 Top Articles

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In recent years knowledge management (KM) has received increased attention from academics and practitioners. There are several challenges to establishing KM as a separate discipline one of the most central being conceptual plurality. The purpose of this paper is to review and position 20 of the most frequently cited KM articles in management journals. More specifically, this paper classifies the KM publications on the subjectivity–objectivity continuum, discusses the strengths and weaknesses of the publications drawing from positivism and interpretative philosophies, and further discusses the challenges in KM, and how objectivity and subjectivity can be used to provide both product and process orientations in future research. Copyright © 2006 John Wiley & Sons, Ltd.

INTRODUCTION

In recent years knowledge management (KM) has received increased attention from academics and practitioners. As an indication, a recent bibliometric analysis shows that 2727 authors have contributed 1407 KM publications since 1975 (Gu, 2004). While this accelerating number of publications indicates the importance of knowledge in organizations, there are challenges to establishing KM as a separate discipline. One of them is conceptual plurality. Because KM evolved from a spectrum of theoretical traditions ranging from philosophy to computer science and economics, it is considered to be a 'mixed bag' of 'idealistic theories' without a coherent theoretical base (Alvesson and Karreman, 2001; Donaldson, 2001; Foss and Mahnke, 2002).

Despite the increasing number of KM publications, relatively little attempt has been made to present them in a philosophy-based literature review. While most reviews have touched on important themes and areas (Cross, 1998; Scarborough *et al*., 1999; *Journal of Management Reviews*, 2001), we suggest that confusion in this new, emergent field is created by a variety of ontological and epistemological assumptions. The purpose of this paper is to review the 20 most frequently cited KM articles published in management journals. Specifically, this paper (1) classifies KM publications based on a philosophical subjectivity–objectivity continuum, (2) discusses the strengths and weaknesses of the publications drawing from positivism and interpretative philosophies, and (3) identifies the challenges in KM and discusses how objectivity and subjectivity can be combined to provide both product and process orientations in future research.

The rest of this paper is structured as follows. The following section describes the publication selection criteria and profile. The second section provides an overview of the philosophical underpinnings of positivism and interpretative philosophies. These philosophical perspectives provide the basis for a subjective-objective continuum in the third

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section in which the 20 KM publications are reviewed. The penultimate section discusses methodological challenges in KM research and provides some methodological recommendations. The final section provides a summary of the paper and lists some limitations.

SELECTION CRITERIA AND PUBLICATION PROFILE

In the initial literature selection, we consulted two bibliometric studies (Subramani *et al*., 2003; Serenko and Bontis, 2004). First, Subramani *et al*. (2003) listed 58 of the most frequently cited KM scholars between 1990 and 2002 using the Social Science Citation Index (SSCI) and Science Citation Index. Second, Serenko and Bontis (2004) ranked publications on KM and intellectual capital published/cited in the *Journal of Intellectual Capital*, the *Journal of Knowledge Management*, and *Knowledge and Process Management* between 1993 and 2003.

The following criteria were used to select works from these publications. First, we limited the selection to peer-reviewed management journals, as the Serenko and Bontis study indicates that most KM publications relevant to the present study could be found in journals that addressed the discipline of management. Instead of including publications on 'hardware and software' issues, publications in management journals highlight the importance of people and organizational issues (Hazlett *et al*., 2005). Second, we focused on publications classified as KM. While an agreed upon KM definition does not exist, we used one of the most often used definitions in which KM is described as 'the generation, representation, storage, transfer, transformation, application, embedding and projecting group and organizational knowledge' (Hedlund, 1994:76). In contrast to Subramani *et al*. (2003), organizational learning and evolutionary economics were not classified as KM. In parallel with Scarbrough and Swan (2001), we suggest that KM is not a development of, but rather a divergence from, the organizational learning literature. In our opinion, knowledge also plays a secondary role in evolutionary economics.

The publications from Subramani *et al*. (2003) and Serenko and Bontis (2004) were selected based on author or publication overlap. If only authors were listed, we used the SSCI (all databases/all years) to select publications for authors. We also used the SSCI to check the validity of the bibliometric studies. We had to make compromises, as there were notable differences in popularity between authors' books and journal articles. This was apparent with Karl Sveiby and Thomas Davenport, whose books published in the 1990s have gained wide reputation. It can be claimed that conceptual discussions in books and journal publications are similar. Also the Brown and Duguid 1991 article on organizational learning has more citations than the selected article published in 2001. A list of publications in *alphabetical order* is provided in Table 1.

Table 1. Most influential KM publications in management journals reviewed

Author (s)	Paper	Year
1. Barney, J.	Firm Resources and Sustained Competitive...	1991
2. Brown, J. S. & Duguid, P.	Knowledge and organization: a social-practice...	2001
3. Conner, K. R. Prahalad, C. K.	A resource-based theory of the firm	1996
4. Cohen, W. M. *et al*.	Absorptive capacity	1990
5. Davenport, T *et al*.	Successful knowledge management projects	1998
6. Grant, R. M.	Toward a Knowledge-Based Theory of the Firm	1996
7. Nahapiet, J. & Ghoshal, S.	Social capital, intellectual capital...	1998
8. Hansen, M.	The search-transfer problem: the role of weak...	1999
9. Hedlund, G.	A model of knowledge management...	1994
10. Kogut, B. & Zander, U.	What do firms do? coordination, identity...	1996
11. Kogut, B. & Zander, U.	Knowledge of the firm, combinative capabilities...	1992
12. Krogh, G.*	Care in knowledge creation	1998
13. Leonard, D. & Sensiper, S	The role of tacit knowledge in group innovation	1998
14. Nonaka, I.	A dynamic theory of organizational knowledge...	1994
15. Nonaka, I. & Konno, N.	The concept of Ba: building a foundation for...	1998
16. Sanchez, R. & Mahoney, J. T.*	Modularity, flexibility, and knowledge...	1996
17. Spender, J-C	Making knowledge as the basis of a dynamic...	1996
18. Sveiby, K-E. & Simons, R.	Collaborative climate and effectiveness...	2002
19. Teece *et al*.	Dynamic capabilities and strategic management	1997
20. Tsoukas, H.	The firm as a distributed knowledge system...	1996

*Lists inconsistent in regard of this author.

In order of importance, the publications deal with knowledge in organizations (11), knowledge-based theory of the firm (5), strategy (2), and knowledge creation (2). Most of the articles have been published in *Strategic Management Review* (6), *Organization Science* (5), and *California Management Review* (3).

PHILOSOPHICAL FOUNDATIONS

In accordance with the work of several scholars (e.g. Burrell and Morgan, 1979; Mitroff and Mason, 1982; Schultze and Stabell, 2004), ontological and epistemological differences in the selected publications are discussed using a subjective–objective continuum. Positivism has long had a dominant position in the social sciences with its objective view of social reality.[1] In contrast, interpretative philosophies, such as phenomenology and pragmatism, place an emphasis on subjectivity.[2]

The differences between positivism and interpretative philosophies are apparent in their views on knowledge, humans and social entities. Adopting a realistic ontology, positivist theories are dualistic and conform to the rules of formal logic (see e.g. Boland, 1998; Wicks and Freeman, 1998). Due to the Cartesian body-mind split, knowledge is objective, existing separately and independently from humans. The positivist ontology is based on the view that there are objective facts about the world that do not depend on interpretation or even the presence of any person. From this perspective social science is (or should be) value-free. The world is conceived though causal relations between objects; and the highest form of knowledge is universal knowledge. Theories based on positivism are constructed on *a priori* notions, in which humans and social entities composed of separate parts operate the same as the parts in unison. Further, human behaviour is a physiological response to an external stimulus explicable by scientific laws. Similar to uniform notions of knowledge and humans, social institutions are homogeneous entities.

In contrast, scholars drawing on interpretative philosophies argue that knowledge and social entities cannot be understood as objective things. They present a contextual, subjective and relational view of knowledge, humans and social entities. For example, phenomenological philosophers propose that human knowledge is subjective, situational, bodily, relative and interpretational (Heidegger, 1962; Merleau-Ponty, 1962). Because meanings emerge from subjective experiences, emphasis is placed on tacit knowledge over explicit knowledge (Polanyi, 1967). It is impossible for humans to attain objective social knowledge existing separately from subjectivity (Husserl, 1931; Merleau-Ponty, 1962). Our knowledge claims are interpretations (rather than representations), since they depend on time-space. In stark contrast to positivist intransitive ontology, transcendental ontology allows humans to have idiosyncratic dreams, values and wishes. Intentionality, embedded in the categories of perception and basic orientation to the world, explains the process of social change. Social entities are dynamic with distinctive histories and other collective characteristics. Humans are embedded parts of these systems, constructed and evolving through individual and collective interaction.

OBJECTIVITY AND SUBJECTIVITY IN KM

Objectivity and subjectivity appears in the selected diverse and pluralistic publications, initiating debates about knowledge and its role in organizations. Publications based on economics are largely based on positivist rationale. In contrast, scholars drawing from interpretative philosophies tend to provide processual and contextual KM accounts. The selected publications are discussed based on their conceptual perspectives of knowledge, humans and social institutions.

Knowledge

The complex nature of knowledge has been discussed extensively in KM. One of the most common ways to describe knowledge is to distinguish it from data and information (see e.g. Nonaka, 1994; Spender, 1996). Data can be classified as raw numbers, images, words, and sounds derived from observation or measurement. Information represents data arranged in a meaningful pattern. Unlike information, knowledge is about beliefs, commitment, perspectives, intention and action (Nonaka, 1994).

[1]Positivism is the name given to the philosophical position primarily developed by Saint-Simon, and more explicitly and influentially by Auguste Comte. Its roots can, however, be traced back at least as far as Francis Bacon and the British empiricist school of the 17th and 18th centuries. In these days, positivism is largely an abused term that refers to various types of positivism that do not all share common features.

[2]The interpretativist tradition, in its various forms, relates to the humanistic and historistic tradition that first developed in Germany in the 19th century. Currently, interpretative philosophies are equated mostly with hermeneutic, phenomenological and pragmatic philosophies.

Scholars have largely unified perspectives of data and information in comparison to knowledge. Several scholars have created taxonomies to define and clarify knowledge in their studies. Economic-based publications frequently make use of Ryle's (1949) distinction between knowledge-that and knowledge-how (practical knowledge) (Kogut and Zander, 1992, 1996). Perhaps influenced by Ikujiro Nonaka (1994), most recent KM publications are based on Michael Polanyi's (1967) distinction between tacit and explicit knowledge. Linkages between these taxonomies have been developed. For example, tacit knowledge, hard to articulate and transfer, has been linked with know-how (Conner and Prahalad, 1996; Kogut and Zander, 1992), and explicit knowledge, relatively easy to articulate and codify, to declarative knowledge (Kogut and Zander, 1992, 1996; Hansen, 1999) and articulate knowledge (Hedlund, 1994). These taxonomies show that knowledge has both objective and subjective dimensions.

Differences exist between explicit and tacit knowledge and the extent to which they should be differentiated. Nonaka (1994) proposes that explicit and tacit knowledge are not exclusive, but complementary. Thus, knowledge can be converted from one form to the other. Scholars, drawing from interpretative philosophies, propose that strict categorization of knowledge is impossible because of its holistic nature (Brown and Duguid, 2001; Nahapiet and Ghoshal, 1998; Tsoukas, 1996). Brown and Duguid (2001), for example, propose that knowledge is related to action and practice, making doing and knowing inseparable. Taking a constructivist view, Tsoukas (1996) claims that no matter how explicit rules are in firms, there will always be some uncertainty that creates a need for humans to make inferences and judgements. Knowledge and meanings from this perspective are viewed as a social constructs, which cannot be reduced to the meaning-giving activity of individual subjects. Similar to Polanyi (1967), they argue that all knowledge is tacit or rooted in tacit knowledge.

In addition to the ongoing disagreements about the nature of knowledge, there is some discrepancy concerning the primary sources of knowledge. Following the cognitive perspective, knowledge, as the term is used in several publications is considered to be intimately attached to the knower, an individual who holds it (Cohen and Levinthal, 1990; Davenport *et al*., 1998). In these publications, collective knowledge is explained as an aggregation of individual knowledge. In contrast, several scholars propose that collective knowledge is not reducible to individuals. Spender (1996), for example, separated individual knowledge and collective knowledge in his taxonomy. In most works, collective knowledge is embedded into artefacts, culture and identity, routines, etc. Some scholars, taking a collective-level perspective, also emphasize the socially constructed nature of knowledge (Brown and Duguid, 2001; Nahapiet and Ghoshal, 1998; Nonaka, 1994; Tsoukas, 1996). These scholars argue that knowledge is created and held collectively; people learn and create knowledge through continuous social interactions.

Although taxonomies, frequently separating knowledge into exclusive objective and subjective categories, promote positivist 'either-or' thinking, some scholars use them to emphasize the processual and multilevel nature of knowledge. Based on Nonaka (1994), for example, tacit and explicit knowledge exist at multiple levels, such as individuals, groups and organizations. Because these two interrelated knowledge dimensions exist simultaneously at individual and collective levels, knowledge creation can be described as a process in which individual knowledge is amplified and internalized as a part of an organization's knowledge base and *vice versa*. Knowledge creation always starts with individuals as humans acquire and process tacit knowledge in environmental interaction. This theory is based on the idea that an organization's role is the integration/explication of tacit knowledge at all organizational levels.

In summary, there are persistent differences in the nature of knowledge, particularly with respect to the question of whether social or collective knowledge exists and in what form. While several scholars emphasize the subjective, tacit, situational and dynamic dimensions of knowledge, they often treat it as an objective and functional entity rooted in regulation. This functional view is prominent among scholars drawing from economics. At the other end of the continuum are a few scholars who propose that knowledge cannot be captured by taxonomies because of its fluid nature. Due to these conceptual differences, there is no agreed upon definition of knowledge and its functioning in social entities. It can be further claimed that some important issues have been overlooked. Most, if not all, discussions avoid the issue of power or the role it plays in the acquisition, dispersal, or status of knowledge.

Humans

Curiously, only a few scholars have discussed the nature of the knowers, humans. The focus on knowledge creation, integration, and transfer in collectives might be one of the reasons why

scholars have limited discussions on individuals as primary knowledge producers. Indeed, much of the KM literature refers the firm level and therefore does not have an explicitly individualistic starting point. As humans are frequently presented as aggregate parts of groups/firms, there is a need for comprehensive conceptualizations of human nature and human interactions in social collectives as knowledge-creating beings.

The nature of humans is discussed most frequently in the knowledge-based theories of the firm. Kogut and Zander (1992, 1996) proposed that firms exist because humans have preferences for moral communities as well as shared identities. Individuals may be characterized by unsocial sociality, or the dichotomy between self-interest and the longing to belong. Instead of focusing on the perspective of human opportunism ('self-interest seeking with guile', Williamson, 1996) which tends to prevail in institutional economics, humans are allowed to have subjective emotions associated with friendship, empathy, loyalty and abstract values, such as notions of good, beauty and truth. Firms provide humans with a shared sense of community in which discourse, coordination, and learning are structured by identity. This symbolic role of identity enables speed and efficiency in the creation and transfer of knowledge. This notion of humans (and firms) has attracted considerable criticism from organizational economists (e.g. Foss, 1996).

In contrast to Kogut and Zander's non-economic perspective of humans, Conner and Prahalad (1996) build on Simon's (1955) concept of bounded rationality. Assuming that opportunistic behaviour will not occur, they propose that cognitive limitations explain why no two individuals possess identical knowledge stocks. Partly because of the bounded rationality, individuals are motivated to exchange knowledge. Moreover, it is assumed that individuals will behave truthfully, and tacit knowledge is also viewed as a result of bounded rationality. Because human interactions are conceptualized as rational transactions, people are motivated to acquire knowledge to complete their ongoing tasks. These rules are held to be valid in all intelligent behaviour. In this conceptual piece, a greater emphasis is placed on knowledge exchange than on knowledge creation.

In publications drawing from various interpretative philosophies, individuals act as intentional components of communities (Brown and Duguid, 2001; Tsoukas, 1996). However, the dynamic interaction between individuals and communities (i.e., linkages between micro and macro) remains largely untouched by scholars. Based on Tsoukas (1996), for example, humans engage in particular discursive practices. Their ability to follow implicit rules is largely grounded on an unarticulated background, known as socialization. His explanation of human creativity is based largely on Bourdieu's (1990) concept of *habitus*. Individuals are described as active co-producers of their surrounding reality. Instead of acting as objective problem-solving machines, contextual values and social relations influence individual action.

In summary, humans are often conceptualized either as deterministic or voluntaristic in the publications reviewed. In the former, emphasis is placed on individuals and in the latter, on collectives. Positivist-influenced scholars describe humans through methodological individualism through which humans act as cognitive machines. This approach allows the conceptualization of firms as homogeneous entities. In these *a priori* perspectives, atomized humans can further be manipulated through quantifiable parameters. Although providing theoretical clarity, positivist perspectives combined with subjective notions of knowledge create ontological incoherence. However, when humans are portrayed as voluntaristic it is hard to explain why changes actually take place.

Social Entities

Knowledge in collectives, mostly in groups and organizations, is discussed at length in KM. While organizations are frequently conceptualized as communities whose primary function is to produce knowledge (e.g. Hedlund, 1994; Kogut and Zander, 1992, 1996), KM lacks the conceptual uniformity found, for example, in the field of organizational economics. Perhaps in the quest to position the young and emerging field of KM and increase the chances for publication in 'high quality' journals, some scholars have been influenced by organizational economics and have sought to explain the nature of knowledge-based firms through the three fundamental questions proposed by Ronald Coase (1937)[3]. In contrast, several other scholars present organizations as subjective organisms, which exist without clear borders and internal hierarchy.

The RBV (Resource-based View) theory of the firm is built on the linear accumulation of valuable, rare, and non-imitable resources (see Barney, 1991). Taking the firm as a unit of analysis, RBV construes firms as bundles of resources and suggests that their attributes affect the firm's competitive

[3] The questions are: Why do firms exist? What factors determine the boundaries of the firm? What determines the internal governance mechanisms?

advantage and performance. In knowledge-based views, the relative advantages of firms over markets relate to firms' superior abilities in creating and exploiting knowledge (Grant, 1996; Kogut and Zander, 1992, 1996; Spender, 1996). These scholars propose that firms are more efficient than markets at combining and diffusing knowledge due to their superior coordinative attributes and processing abilities. Consistent with the RBV, the firm's existence and competitive advantage is based on knowledge as an inimitable and rare resource. Tacit knowledge, in particular, cannot be transferred in markets even if contractual arrangements would permit it (Kogut and Zander, 1992, 1996). Firms' boundaries are also explained by knowledge. Knowledge generation is more efficient within the firms' boundaries than in the markets. In a related discussion, a firm's ability to process new external knowledge depends on its absorptive capacity (Cohen and Levinthal, 1990).

While firms are conceptualized as mechanisms for creating and utilizing knowledge (Barney, 1991; Conner and Prahalad, 1996; Grant, 1996), the RBV and knowledge-based theories, based largely on positivism, have limited potential to explain knowledge creation processes. Although from the RBV perspective firms are described as accumulating collectively held knowledge stocks in a path-dependent way, the process by which this is done has often remained a 'black box' because static positivist ontology does not allow for processual conceptualization. Consequently, firms in the RBV and knowledge-based accounts are static entities. Teece *et al*. (1997) seek to replace these static perspectives by explaining knowledge resource accumulation in firms as an evolutionary process. From this perspective the competitive advantage of firms rests on distinctive processes (ways of coordinating and combining), shaped by the firm's (specific) asset positions, and the evolution path(s) it has adopted or inherited. A consideration of the dynamic nature of strategy has further led to the concept of dynamic capabilities, or the ability of an organization to learn, adapt, change, renew over time, involving problem finding and problem solving at the organizational level.

Instead of competing with organizational economics by building a knowledge-based theory of the firm, it has been the objective of several scholars to describe how knowledge is created, articulated, disseminated, and legitimated within organizations. For instance, Brown and Duguid (2001) proposed that organizations contain communities, rather than formally structured groups, creating/retaining collective knowledge to which access is dependent on social acceptance and participation. In tandem with this approach Nahapiet and Ghoshal (1998) and Van Krogh (1998) focus on social relationships in knowledge creation. Drawing from the network theory, Nahapiet and Ghoshal (1998) conceptualized social capital as facilitating the development of intellectual capital by influencing the conditions necessary for the exchange and combination of intellectual capital. Shared language, codes, and narratives in the network help people get in touch with each other, provide an apparatus for evaluating the benefits of the exchange, and allow for the development of new knowledge. Von Krogh (1998) argues that care is one of the key enabling conditions for knowledge creation, and identified behavioural dimensions emphasizing care.

Instead of Weber-type hierarchical bureaucracies, scholars 'uniformly' offer internal hybrid forms ('hierarchical forms infused with elements of market control', Zenger, 2002:79) as structural solutions to the transfer tacit knowledge (see Davenport *et al*., 1998; Grant, 1996; Hedlund, 1994; Nonaka, 1994; Sanzhez and Mahoney, 1996). Decomposing large organizational units into smaller ones characterized by specialization or function economizes on the transmission of knowledge. For example, Sanchez and Mahoney's (1996) modular perspective highlights the isomorphism between knowledge structures and the firm's core products. From a more philosophical perspective, Nonaka (1994) proposes a dual form consisting of hierarchy (for knowledge socialization and internalization) and project-type organization (for knowledge externalization and combination). Hypertext organizations are made up of interconnected layers providing a base for knowledge creation (Nonaka, 1994). These perspectives suggest that interconnected teams are the fundamental knowledge creation and learning units in modern organizations.

Governance in internal hybrids is based mainly on community-like aspects, such as cultural and social control. Instead of hierarchical authority and control, shared visions and culture guide action and motivate employees (e.g., Kogut and Zander, 1992, 1996; Hedlund, 1994; Nonaka, 1994; Leonard and Sensiper, 1998; Sveiby and Simons, 2001). The role of top management is to articulate vision and corporate culture to support corporate activities (Hedlund, 1994; Nonaka, 1994). Understanding and internalizing these visions are proposed to motivate employees to cooperate in the achievement of shared organizational goals. Authority, responsibility, and resources are delegated to small interdependent units, consisting of knowledgeable and multi-skilled employees. Managers exert control through negotiation or other soft methods. Instead of vertical control, peer

group governance in small units is proposed to increase motivation and knowledge creation (Nonaka, 1994). Trust cerated and maintained through interactions is vital for knowledge generation and sharing, motivation, loyalty and belonging in organizations (Kogut and Zander, 1992, 1996; Von Krogh, 1998).

In contrast to dichotomies in most KM publications, the knowledge creation theory is based on the 'both-and' view (Nonaka, 1994). In this theory, knowledge creation occurs through phases: *socialization* (tacit-to-tacit) => *externalization* (tacit-to-explicit) => *combination* (explicit-to-explicit) => *internalization* (explicit-to-tacit). Enabled by creative chaos, information redundancy and requisite variety, this process forms a spiral moving through interrelated organizational levels. The successful organization is one that best enables the knowledge creation spiral. In addition, *ba* ('shared context in motion') is conceptualized to facilitate knowledge creation (Nonaka and Konno, 1998). Four types of *ba* corresponding to the knowledge creation modes are: originating *ba* (*socialization*), interacting *ba* (*externalization*), cyber *ba* (*combination*), and exercising *ba* (*internalization*).

In summary, social entities are frequently dichotomized and conceptualized either as objective machines or processual organisms. In the former, groups and organizations are a sort of higher-order individual and function as such. As a consequence, knowledge integration in the former view is achieved through coordination and in the latter through cooperation. For instance, while the overarching theme of the RBV is the accumulation of inimitable resources, there is little discussion as to how such resources are accumulated, partly because its positivist foundations are ill-equipped to explain such processes. In contrast, publications drawing from interpretative philosophies describe organizations as processual organisms in which communities-of-practice type arrangements are used to combine and create knowledge. These discussions neglect structures supporting knowledge creation. A notable exception is the dynamic theory of knowledge creation, combining processes and structures, and treating knowledge as a root metaphor rather than as a variable (Nonaka, 1994).

CHALLENGES IN AND RECOMMENDATIONS TO THEORY-BUILDING AND METHODOLOGY

In the publications reviewed above, differing assumptions about the nature of organizational phenomena (ontology), the nature of knowledge (epistemology), and the nature of ways of studying those phenomena (methodology) are rooted in positivism and interpretative philosophies. In this section, we argue that these contrasting philosophical perspectives should be combined to create dynamic accounts of knowledge and its creation in groups and organizations.

The positivist perspective maintains that a true explanation or cause of an event or social pattern can be found and tested by scientific standards of verification. Positivistic scholars examine social phenomena through cycles of hypotheses development and testing. Subjects and objects are treated as two separate, independent entities. Whether the law-like propositions are quantitative or qualitative, they depict a subject matter through causal relationships that are time insensitive. Objective positivism has benefits, as it enables scholars to create coherent theories in which all parts act in a predetermined manner. However, objective accounts are static, dualistic, and hostile to context and subjective aspects of humans, such as ideals, intuition, experience and values.

Given the positivist dominance in social science research, it is not surprising to find that several KM scholars trying to emulate the success of the natural sciences in seeking to produce objective and predictive theories. The principal conceptual rationale for most of these works is rooted mainly in economics. For example, knowledge is conceptualized as an objective asset in most RBV and knowledge-based views of the firm (Barney, 1991; Conner and Prahalad, 1996; Grant, 1996). While knowledge is separated from other organizational resources, it is objectified, immobilized, and functionalized in order to present it as a strategic asset. Tacit knowledge in these publications is assumed to have a linear impact on firms' operations. Knowledge accumulation is linear, something self-evident, or simply left as a 'black box'.

In contrast, scholars influenced by interpretative philosophies avoid categorizations and causalities, seeking to produce holistic accounts of knowledge and its role in social entities. Instead of positivist neutrality, the emphasis is on subjective contextual processes. The realm of social affairs has no concrete structure; it is socially constructed (Burrell and Morgan, 1979). Duality is shown in the acceptance of an impermanent or transient state of reality. Scholars influenced by interpretative philosophies use methods associated with ethnography, participant observations, and hermeneutics. Despite the variety of methodological approaches, what unifies them is their phenomenological base, which stipulates that a person and the world are inextricably related through the

'lived' experience of the world. While positivist scholars criticize these 'soft' approaches, their relative strength lies in extending descriptions to processes and embodied meanings. However, subjective accounts lack precision and can provide little more to practitioners beyond detailed 'thick descriptions'.

Instead of seeking to identify any purely subjective view among the publications reviewed, a few scholars can be said to draw several interpretative philosophies (e.g. Brown and Duguid, 2001; Nonaka, 1994; Spender, 1996; Tsoukas, 1996). These scholars, at least partially, provide contextual, practice-based accounts of knowledge and its role in organizations. In these semi-subjective perspectives, knowledge is a dynamic, socially constructed, context-time-specific entity. There is no single objective truth, but multiple dimensions of reality, meaning different things to different actors at a different time-space. Although providing a dynamic holistic perspective of knowledge, subjective perspectives are not without their limitations. Relatively little is said about the relationship between knowledge and performance, and, with the exception of Nonaka (1994), how firms need to be managed to create knowledge.

Although positivist explanations with objective views of knowledge have distinctive limits, subjective views emphasizing tacit knowledge are limited in their ability to explain how social entities create knowledge. As each approach provides a different—but partial—understanding of knowledge and its role in social entities, Nonaka (1994) has explained knowledge creation as a 'both-and' phenomena leaving room for both product and process perspectives (Nonaka, 1994). Instead of assuming that it has purely subjective or objective dimensions, people validate tacit knowledge through social interaction. Subjective knowledge is in this way 'objectified' and becomes a socially 'justified true belief'. The subjective dimensions of humans and organizations are all synthesized into one conceptual model. Despite some criticism, scholars have noted that Nonaka's theory cannot be characterized as being embedded in either the objectivist or subjective perspectives of knowledge as it embodies elements of both (Hislop, 2005). The theory emphasizes the importance of human activity and social interaction to the creation and development of knowledge (Hislop, ibid.).

In a recent KM publication (Nonaka and Toyama, 2005), the opposing or competing positivism and interpretative approaches have been proposed as being complementary. These scholars propose that knowledge is created through the synthesis of thinking and actions of individuals, interacting with each other within and beyond the organizational boundaries. Their holistic framework incorporates subjectivity issues such as values, context, and power, and aims to capture dynamic knowledge creation processes through the interaction of subjectivities and objectivities to shape and be shaped by the business environment. In the framework, knowledge inherently embraces human values and ideals. In addition, 'truth' becomes a 'socially validated truth' established through social interactions, instead of existing somewhere to be discovered. Knowledge, therefore, is not treated as absolute objective or absolutely subjective. Instead, the notion of knowledge as a continuum emphasizes the contrasting nature of knowledge subjectivity and objectivity. This perspective has gained some support in cognitive psychology literature in which tacit knowledge is found to be more comprehensive, detailed, and richer than explicit knowledge (Dowd and Courchaine, 1996 for a review). Indeed, if knowledge stays within one's subjective world, it can expand only so far since there is a limit to the world one can see or experience. Human interaction and the resulting creation of objective knowledge is the key to progress. Thus, organizational knowledge creation means that subjective tacit knowledge held by an individual is externalized into objective explicit knowledge to be shared and synthesized. The created knowledge is consequently used and embodied by individuals to enrich their subjective tacit knowledge. In summary, organizational knowledge creation is the synthesis of subjectivity and objectivity.

As both subjective and objective perspectives are beneficial, the challenge for KM is to move away from either-or to both-and perspectives. Scholars have recently suggested some methodological frameworks to accomplish this task. In order to provide more relevant and valuable social research, Flyvbjerg (2001) has argued for phronetic social research to create a balance between objective and subjective perspectives.[4] In contrast to an objective on-looker perspective, phronetic research is concerned with the deliberation of contextual values and interests. In theory building, the gist of Flyvbjerg's argument is that theories in social science are necessarily context-bound in a way that natural science theories are not, and therefore a social science that is based solely on positivism fails. Unfortunately, KM scholars often forget that

[4]Phronetic social science is based on an interpretation of the classical Greek concept of phronesis. Phronesis is defined as practical wisdom. Based on practical value-rationality, it is pragmatic, variable, context-dependent and oriented toward action (Flyvbjerg, 2001).

knowledge is dynamic and therefore beyond the reach of positivist models. This review indicates that knowledge is often reduced to causalities and frameworks. Although the objective side of social reality has been emphasized, KM needs to incorporate more efficiently the subjective side of management, which is has been avoiding.

Phronetic social research is still more of an aspiration rather than coherent methodological framework as it gives subjectivity the upper hand over objectivity, even though they should work in a balanced, complementary way (Gereluk, 2002). It can further be argued paralleling Wicks and Freeman (1998) that a simple combination of objective and subjective views is at best problematic or at worst impossible. For example, taking a positivist ontology and interpretative epistemology means that the adopted truth criteria and knowledge accounts are dependent upon the researcher's subjective view, and the knowledge claims' correspondence to objective reality. This is simply not possible. Although we believe that complete objectivity is impossible, that does not mean it is necessary to abandon the search for socially validated truth in KM research. Several scholars have promoted a pragmatic approach to achieving a state of coexistence between competing objective and subjective perspectives (e.g. Wicks and Freeman, 1998). There is need for more multi-perspectives based inquiries also in empirical research. When objectivity and subjectivity are synthesized by moving beyond these competing views to alternative epistemological and ontological assumptions, we arrive at KM research that matters.

CONCLUSION AND LIMITATIONS

The contemporary field of KM has proved to be an alluring one for scholars and practitioners. While we are slowly starting to understand the nature of knowledge and its role in social entities, there is still a lack of clear, unified foundations in KM. Scholars, for example, have drawn on philosophy to define knowledge, economics to discuss the role of knowledge in organizations, and psychology to explain human motivation/interaction patterns. While most scholars build their discussions on economics and sociology, and present an objective perspective of knowledge, human agents, and social entities, a few scholars have drawn from interpretative philosophies in order to provide more subjective perspectives.

Conceptual plurality is one among the various challenges that KM faces. While positivism and interpretativism have long divided social scientists, KM is a 'mixed bag' because of its evolution from several disciplines. As a young and emergent field, there can also be an inclination on the part of researchers to mirror the research of more established fields, especially organizational economics. Instead of making either-or choices, objective and subjective views should be combined, or efforts to move beyond them need to be made to generate KM research that matters. Some decisive steps toward that direction have been taken by Nonaka and his associates. Despite some weaknesses, one interesting methodological alternative for the future KM research is phronetic social research (Flyvbjerg, 2001), balancing objectivity and subjectivity. Scholars have further promoted a pragmatic approach to achieve coexistence between objective and subjective perspectives (Wicks and Freeman, 1998).

This paper has limitations. First, it has been claimed that the subjective–objective continuum is oversimplified and strengthens false dichotomies (Deetz, 1996). While strict categorization is difficult, if not impossible, because objectivity and subjectivity represent different points on a continuum, there are no viable alternatives to evaluate social science literature (Schutze and Stabell, 2004). Second, a strict categorization of KM publications is also contestable due to conceptual inconsistencies and usage of various philosophical perspectives even in a single paper. Our selection of publications is also open to debate as no consensus of KM exists. While some scholars classify organizational learning and evolutionary economics as KM (Subramani *et al*., 2003), others adopt a narrower view (Nonaka and Toyama, 2003). Finally, bibliometric studies used in the selection have limitations. For example, the Subramani *et al*. (2003) work listed authors but not publications, and the Serenko and Bontis (2004) analysis was limited to three journals.

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