Exploring the knowledge landscape: four emerging views of knowledge

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Abstract

Purpose – The concept of “knowledge” is presented in diverse and sometimes even controversial ways in the knowledge management (KM) literature. The aim of this paper is to identify the emerging views of knowledge and to develop a framework to illustrate the interrelationships of the different knowledge types.

Design/methodology/approach – This paper is a literature review to explore how “knowledge” as a central concept is presented and understood in a selected range of KM publications (1990-2004).

Findings – The exploration of the knowledge landscape showed that “knowledge” is viewed in four emerging and complementary ways. The ontological, epistemological, commodity, and community views of knowledge are discussed in this paper. The findings show that KM is still a young discipline and therefore it is natural to have different, sometimes even contradicting views of “knowledge” side by side in the literature.

Practical implications – These emerging views of knowledge could be seen as opportunities for researchers to provide new contributions. However, this diversity and complexity call for careful and specific clarification of the researchers’ standpoint, for a clear statement of their views of knowledge.

Originality/value – This paper offers a framework as a compass for researchers to help their orientation in the confusing and ever changing landscape of knowledge.

Keywords Knowledge management, Publications

Paper type Literature review

Introduction

Knowledge has become the driving force in current economy, and it is considered the essential source of competitive advantage. Efficient management of knowledge, its measurement, reporting, sharing, and protecting have become everyday practices for many businesses. Although “knowledge” per se as a concept is not new, knowledge management (henceforth KM) is a relatively new discipline of the 1990s. There has been a growing interest towards KM research, which has resulted in a vast amount and variety of publications (e.g. Lave and Wenger, 1991; Nonaka and Takeuchi, 1995; Spender, 1998; Scharmer, 2000; Tsoukas, 2000; von Krogh et al., 2000a; Knorr-Cetina, 2001; Mische, 2001; Fuller, 2002; Skyrme, 2003; Fuller, 2004; Jashapara, 2004). The knowledge landscape is very complex and controversial. In many cases “knowledge” is defined and understood differently by the authors. In the literature there are many types of knowledge identified (e.g. tacit knowledge, tacit embodied knowledge, tacit not-yet-embodied knowledge, self-transcending knowledge) or the same knowledge could be called differently (e.g. tacit knowledge, know-how, knowing, experiential knowledge, implicit knowledge, sticky knowledge). All these make the understanding of knowledge very confusing. Therefore, there is an increased need for understanding what knowledge we are talking about when we do research in this field.
The goal of this KM literature review is to identify the emerging types and views of “knowledge” as main concept of this discipline, and to develop a framework to illustrate the interrelationships of these knowledge types.

The paper is structured as follows, first, drawing on a wide range of KM literature (1990-2004) the four major views of “knowledge” will be discussed, and then, the different views and types of knowledge will be concluded by presenting the developed framework and by indicating practical implications for researchers.

**The four views of knowledge**

This paper seeks to identify emerging views of knowledge in the KM literature. It is expected that by exploring “knowledge” as a concept and the different types of knowledge will result in a framework what brings them together and shows their interrelationships. This framework as a compass could help researchers to orientate in the confusing landscape of knowledge.

The concept of knowledge is complex and controversial:

... the English concept of knowledge embodies a variety of different categories of skills, know-how, experiences, beliefs, capacities, and so forth ... In organizations, both these forms of knowledge (i.e. abstract knowledge and practice-based knowledge, additions of the present writer( are used. Therefore, the knowledge management literature needs to be able to operate with a conceptual framework that enables such analysis (Styhre, 2003, pp. 51-52).

Because knowledge is a complex concept, it is understandable that it has been explained and approached in many different ways. How to make sense of this complex and constantly changing knowledge landscape? Table I represents a carefully selected range of leading KM publications presented in chronological order, with the indication of the publication’s main view of knowledge, concepts, tools, and perspectives as suggested by the author(s).

Table I shows that authors may represent more than one view of knowledge. Additionally, it reveals four major emerging views of knowledge: on the one hand, the ontological and epistemological views, and on the other hand, the commodity and community views.

**The ontological view of knowledge**

Ontology studies the nature of phenomena, in this case “knowledge”. The main ontological questions are:

...whether the “reality” to be investigated is external ... or the product of individual consciousness; whether “reality” is of an “objective” nature, or the product of individual cognition; whether the “reality” is given “out there” in the world, or the product of one’s mind (Burrell and Morgan, 2000, p. 1).

Objectivity and subjectivity in the ontological sense are predicates of entities (brute facts, e.g. “river”, “mountain”, or institutional facts, e.g. “company”, “marriage”) and they describe the modes of existence. Knowledge is the products of the individual mind and it is subjective in the ontological sense (Searle, 1996).

Knowledge or common understanding of information can be built by sharing ideas and stories in a group. Sharing helps to solve conflicts and contributes to learning in action, which is an essential part of knowledge creation (Orr, 1990). Brown and Duguid (1991) (in Nonaka and Takeuchi, 1995, p. 90) showed how an individual’s actual ways of learning, when working in informal groups differ from formal, official practices codified by organizations (Table I).
Individual, group, organization, and inter-organization levels are the four ontological levels of knowledge identified by Nonaka and Takeuchi (1995, p. 57). They write:

In a strict sense, knowledge is created only by individuals. An organization cannot create knowledge without individuals. The organization supports creative individuals or provides contexts for them to create knowledge. Organizational knowledge creation, therefore, should be understood as a process that “organizationally” amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization. This process takes place within an expanding “community of interactions”, which crosses intra- and inter-organizational levels and boundaries (Nonaka and Takeuchi, 1995, p. 59, emphasis added by the present author).

Spender (1996a, 1998) categorized knowledge in the ontological dimension as social and individual knowledge. At the social level knowledge can be collective knowledge (implicit knowledge of collective experience, routines) and/or objectified knowledge (explicit knowledge of shared ideas of existing solutions); at the individual level knowledge can be automatic knowledge (implicit knowledge, e.g. artistic skills) and/or conscious knowledge (explicit knowledge, e.g. concepts, frameworks, facts).
The concept of “Ba” is defined as a platform for developing collective and individual knowledge. Nonaka and Konno (1998) related “Ba” to the SECI knowledge creation model (see more about the SECI model in “The epistemological view of knowledge” section of this paper). “Ba” is a context, a shared physical, virtual, or mental space where knowledge sharing, knowledge creation takes place. There are four different types of Ba proposed by Nonaka: originating Ba, interacting Ba, cyber Ba, and exercising Ba. These different “Ba” are consequently related to the socialization, externalization, combination, and internalization phases of the SECI model.

A pragmatic working definition of knowledge is offered by Davenport and Prusak:

Knowledge is a fluid mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms (Davenport and Prusak, 2000, p. 5).

They emphasize the individual and the social character of knowledge:

...knowledge creating activities take place within and between people ... we obtain knowledge from individuals or groups of knowers, or sometimes in organizational routines (Davenport and Prusak, 2000, p. 6).

Individual knowledge could become an organizational knowledge if individuals (knowledge agent) act upon their knowledge. However, what is still unknown is how this is happening. The relationships between individual and organizational knowledge are still unclear. Dixon (2000) discusses knowledge sharing within and between organizations and for her knowledge is an organizational asset that needs to be shared among individuals as members of organization (this view will be discussed in “The commodity view of knowledge” section of this paper).

The ontological distinction differentiates among four levels of corporate action:

1. **Performing** (delivering results that create value).
2. **Strategizing** (improving the process-based context of performing).
3. **Mental-modeling** (re-framing the assumption-based context of performing).

Tsoukas (2000) has argued that organizational knowledge has been extensively researched. However, there is an important question still unanswered: how is knowledge connected to action? Tsoukas provides a knowledge definition which underlines the role of human agency (“carrier of knowledge”):

... knowledge is the individual ability to draw distinctions within a collective domain of action, based on an appreciation of context or theory, or both (Tsoukas, 2000, p. 15).

In addition, he argues that:

Knowledge becomes organizational when, ... individuals draw and act upon a corpus of generalizations in the form of generic rules, produced by the organization (Tsoukas, 2000, p. 16). Organizational knowledge is the capability members of an organization have developed to draw distinctions in the process of carrying out their works, in particular, concrete contexts, by enacting sets of generalizations (propositional statements) whose application depends on historically evolved collective understandings and experiences (Tsoukas, 2000, p. 19).

Ontologically Tsoukas differentiates between open-ended and routine tasks. His views will be also discussed under “The community view of knowledge”.

It is evident that several ontologies exist, depending on activities (cf. Scharmer, 2000), tasks, and problems (cf. Tsoukas, 2000). The task dependency of ontology is not a new phenomenon. It was already recognized by the relativistic, practical Aristotelian view of ontology. Later, both Newton and Leibniz accepted that several ontologies exist, and they
both had presupposed that access to reality requires efforts (actions). Newton’s view of ontology focuses on the one and the many (his goal is to simplify the reality) while Leibniz’s view of ontology focuses on the part and the whole (his goal is to search for a common higher-order category). Leibniz’s view of ontology brings together individual and social knowledge into a continuum (Fuller, 2004, pp. 73-74, in Brewster and O’Hara, 2004).

Knowledge cannot exist in vacuum. Ontologically knowledge is always contextual, and it is a subjective concept. However, in the KM literature knowledge is defined in an epistemological sense as well.

The epistemological view of knowledge

The epistemological view of knowledge is a scientific, philosophical view of the nature of knowledge itself (Table I). Knowledge is an institutional fact because it requires human institutions (e.g. language) for its existence. Searle (1996) argues that institutional facts exist only because we believe in their existence and they are only facts by human agreement. We can make objective and subjective statements about knowledge. Those who believe that knowledge can be acquired, shared, knowledge is “explicit” (knowledge is a more objective concept) and for those who believe that knowledge needs to be personally experienced, knowledge is “tacit” (knowledge is a more subjective concept).

Ryle (1984) sees that epistemology or the “theory of knowledge” could be used for two things, either for “the logic of science” or “the grammar of science”, or for “the philosophy of learning”, i.e. “the grammar of pedagogy”. He puts it this way:

The phrase “theory of knowledge” could be used to stand for either of two things. (1) It might be used to stand for the theory of the science, i.e. the systematic study of the structure of built theories. (2) Or it might be used to stand for the theory of learning, discovery and invention (Ryle, 1984, p. 317).

Burrell and Morgan (2000, p. 2) argue that the epistemological assumptions determine:

. . . whether knowledge is something which can be acquired on the one hand, or is something which has to be personally experienced on the other.

Or to put it simply, knowledge can be objective (entitative) or subjective (processual) in the epistemological sense.

There has been an epistemological debate about the clear separation (e.g. Ryle, 1984; Brown and Duguid, 1998; Nonaka, 1994; Nonaka and Takeuchi, 1995; Spender, 1996a, 1998; Scharmer, 2000) and about the unity (Polanyi, 1966, 1975) of tacit and explicit knowledge. The distinction between intelligence (“knowing how”) and ownership of knowledge (“knowing that”) was made by Ryle (1984, pp. 27-32). “Knowing how” means the ability of a person to act, to perform different tasks, ability to organize and exploit existing knowledge (ability of acting, doing), while “knowing that” means the knowledge (e.g. factual knowledge) that a person holds in his mind (being). The former view refers to tacit, to the intellectual part, and the latter to the explicit, practical part of knowing:

To be intelligent is not merely to satisfy criteria, but to apply them; to regulate one’s actions and not merely to be well-regulated (Ryle, 1984, p. 28).

However, Ryle does not see knowing how and knowing that in continuum:

. . . an action exhibits intelligence, if, and only if, the agent is thinking what he is doing while he is doing it, and thinking what he is doing in such a manner that he would not do the action so well if
he were not thinking what he is doing . . . It is to do a bit of theory and then to do a bit of practice (Ryle, 1984, p. 29).

Similar to Ryle, in their paper called “Organizing knowledge” Brown and Duguid (1998) talk about “know-how” and “know-that” as tacit and explicit knowledge.

Nonaka and Takeuchi (1995) make clear distinctions between tacit knowledge and explicit knowledge. For them tacit knowledge is subjective, where the knower and the known are united in action. Tacit knowledge is based on knowledge of experience (body), simultaneous knowledge (here and now), and on analogue knowledge (practice). Explicit knowledge is objective, where the knower and the known are separated. Explicit knowledge is based on knowledge of rationality (mind), sequential knowledge (there and then), and on digital knowledge (theory):

Organizational knowledge creation is a continuous and dynamic interaction between tacit and explicit knowledge (Nonaka and Takeuchi, 1995, p. 70).

Their socialization, externalization, combination, and internalization (SECI) model of organizational knowledge creation is based on knowledge conversations between tacit and explicit knowledge. They argue that in each phase of knowledge conversation, knowledge has a special content. According to SECI phases they named the knowledge of each phase as “sympathized knowledge”, “conceptual knowledge”, “systemic knowledge”, and “operational knowledge” (Nonaka and Takeuchi, 1995, p. 72) (Figure 1).

From the epistemological point-of-view, Spender (1996a, 1998) makes a distinction between explicit and implicit (tacit) knowledge in categorizing knowledge as elements of an organizational intellectual capital. Explicit knowledge at the individual level is conscious knowledge that is knowledge about facts, frameworks, and concepts known by an individual. Explicit knowledge at the social level is objectified knowledge, the corpus of knowledge, i.e. collectively shared ideas of existing solutions. Implicit knowledge at the
individual level is automatic knowledge, such as for example the artistic skills of a person. Implicit knowledge at the social level is called collective knowledge that is the sum of collective routines and experiences (Figure 1).

Scharmer (2000) goes even deeper into epistemological dimensions and differentiates three types of knowledge: explicit, tacit embodied and “self-transcending knowledge”, or tacit not-yet-embodied knowledge. He argues (in von Krogh et al., 2000b, pp. 36-60) that the self-transcending knowledge is the only source of sustainable competitive advantage, because it is the most difficult to imitate and copy.

However, this clear distinction between tacit and explicit dimensions of knowing has been denied by Polanyi (1966), who argued that each aspect of knowing (knowing what and knowing how) are present in a continuum and that they cannot be separated from each other. Polanyi proposes that:

All knowing is personal knowing – participation through indwelling (Polanyi, 1975, p. 44).

Dwelling in the tool means that we make sense of experience by assimilating the tool through which we make sense. Therefore, tacit knowledge cannot be converted into explicit knowledge (as Nonaka (1994) has claimed) because all knowledge has its tacit dimension. Polanyi observes that:

These two aspects of knowing have similar structure and neither is ever present without the other. I shall always speak of “knowing”, therefore, to cover both practical and theoretical knowledge (Polanyi, 1966, p. 7).

In the KM literature there are discussions on data, information, knowledge, wisdom, and truth. However, this paper focuses on the concept “knowledge” and therefore, it will not examine in depth concepts of data, information, wisdom, and truth. This does not mean, however, that the author of this paper denies their relevance to knowledge creation. For example, the following three observations about knowledge and information made by Nonaka and Takeuchi (1995) are supported by the recent writer:

First, knowledge, unlike information, is about beliefs and commitment. Knowledge is a function of a particular stance, perspective, or intention. Second, knowledge, unlike information, is about action. It is always knowledge “to some end”. And third, knowledge, like information, is about meaning. It is context specific and relational. They consider knowledge as “…a dynamic human process of justifying personal belief toward the ‘truth’” (Nonaka and Takeuchi, 1995, p. 58).

Knowledge serves as the major production factor in the service economy, for example, and it determines the success and the competitiveness of individuals and organizations. Discussions about embodiedness (objective epistemology) and embeddedness (subjective epistemology) of knowledge have created the other two distinct views of knowledge to be examined here, the commodity and the community views.

The commodity view of knowledge

The commodity view of knowledge is a managerial approach to knowledge, where knowledge is understood as a static organizational resource, as a commodity (Table I). This entitative view of knowledge has an epistemologically objective assumption, i.e. “knowledge is an objectively definable commodity”. In the KM literature the commodity view of knowledge is also referred to as the “product-centered” approach, the “content-centered” or as the “codification” approach.

Styhre (2003, p. 159) provides an overview of the KM literature from 1995 to 2000, in which he categorizes the KM monographs (excluding journal papers, edited anthologies) regarding the type of text (as being normative, analytic, strategic, or practice-oriented), regarding theoretical focus, content, tools, concepts or perspectives. By drawing on Styhre’s overview the representatives of the normative or “mainstream knowledge management theory” are: Nonaka and Takeuchi (1995), Davenport and Prusak (2000); Dixon (2000), Pfeffer and Sutton (1999), von Krogh et al. (2000a).
Nonaka and Takeuchi (1995) in their SECI model (discussed also in the previous two sections) assumed that knowledge, as any other asset, can be transferred from one form to another. The SECI model is based on the assumption that conversion between tacit and explicit knowledge is possible.

Another managerial approach to knowledge is presented by Davenport and Prusak (2000), who focus on “using knowledge for long-term business advantage” (Davenport and Prusak, 2000, p. IX). They link knowledge management with all knowledge work processes of the company:

The linkage must specify how knowledge should be imported into and exported from the process, when and how in the process this knowledge should be used, and what difference it should make in the outcome (Davenport and Prusak, 2000, p. XI).

Furthermore, they write:

Knowledge management should become part of everything an organization does, and part of everyone’s job. If companies are successful in managing knowledge, they may even forget that they are doing it (Davenport and Prusak, 2000, p. XV).

From these statements it is obvious that Davenport and Prusak view “knowledge” as an asset that could be exported and imported, and managed.

Dixon’s (2000) work is also very practice oriented, as she uses consultancy experiences to illustrate knowledge sharing where she identifies five types of knowledge transfer within and between organizations. Pfeffer and Sutton’s (1999) view of knowledge is another managerial view. They suggest the concept of the “knowing-doing gap”. They “… focus on management practices that either create or reduce the knowing-doing gap” (Pfeffer and Sutton, 1999, p. 6). They identify several reasons for not turning knowledge into action: knowing “what” to do is not enough; talking can substitute actions; history or memory; fear; measurement; and internal competition. One of their main recommendations is:

… to engage more frequently in thoughtful action. Spend less time just contemplating and talking about organizational problems. Taking action will generate experience from which you can learn (Pfeffer and Sutton, 1999, p. 6).

Pfeffer and Sutton follow the realistic philosophical approach of Macmurray, who saw realism as the unity of theory and practice, and understanding the material world and other persons as important in understanding what it is to be human. Macmurray (1933) (in Jashapara, 2004, p. 41) insisted that action is primary to thought: “Thought begins only when action fails.” He also suggested the change of the Cartesian motto “Cogito ergo sum” (I think, therefore I am) into “Ago ergo sum” (I do, therefore I am).

Mische (2001) argues that:

Knowledge is the final product of data and information … knowledge is defined as: Any relevant intellectual capital, information, learning, and personal perspective that stimulates, contributes to, or results in greater understanding, deliberate action, new behaviors, better decision making, adaptation, and further learning (Mische, 2001, pp. 167-8).

This definition combines many concepts (intellectual capital, learning, information), it considers knowledge that improves performance, which has strategic and operational value, and which results in better decision making. In addition to this managerial view Mische has a dynamic perspective on knowledge and underlines the three main dimensions of knowledge as being relevancy, context, and insightfulness. He argues that:

… the knowledge developed, learned, and transferred must be meaningful to the individual and the organization as an institution and its strategic intention (Mische, 2001, p. 169).

Mische acknowledges both the formal aspects of knowledge and the social dimensions of knowledge.

An expanded understanding of the forms of knowledge has been presented by Fuller (2002). He argues that:
Knowledge is embodied by being placed in a material container (e.g. databases and manuals, the present writer’s addition), whereas knowledge is embedded by being situated in a social context. Science, according to epistemologists, was both disembodied and disembedded. Ideology, according to sociologists of knowledge, was both embodied and embedded. But what about knowledge that is embodied but significantly disembedded? Or knowledge that is embedded but significantly disembodied? Technology answers to the first possibility; information the second (Fuller, 2002, p. 118).

Fuller’s major contribution is that he clearly expanded the understanding of different forms of knowledge, as he considers both objective and subjective epistemological dimensions of knowledge, and that he was able to relate disciplines to each of four forms of knowledge (Figure 1).

Fahey and Prusak (1998) argue that:

... a lot of knowledge management literature takes an “information technology approach” to knowledge wherein information is used as a stock that can be captured, stored, retrieved, and transmitted between organizations, organizational units, and between individuals (Fahey and Prusak, 1998) (in Styhre, 2003, p. 23).

Jashapara (2004) follows exactly this information technology approach to knowledge management by suggesting its five activities as discovering, generating, evaluating, sharing, and leveraging knowledge (Jashapara, 2004, p. 5). He draws on a managerial view about knowledge. However, the book by Jashapara, Knowledge Management: An Integrated Approach (Jashapara, 2004) is extremely logical and provides philosophical perspectives of knowledge. Jashapara too, similar to Fuller, manages to relate different disciplines to knowledge management.

The discussion above has demonstrated epistemologically objective assumptions about knowledge. Next, epistemologically subjective assumptions about knowledge, knowledge as a social construct will be examined.

The community view of knowledge

The community or social view assumes that knowledge is not static, but rather a dynamic concept and that it is created in social interactions: “knowledge is a social construct”. This approach is also referred to as the “process-centered” approach. The processual view of knowledge is interpretive, and it focuses on individuals in a social context. Fuller’s (2002) understanding of knowledge was presented in the previous section of this paper. When Fuller talks about embedded knowledge, he understands knowledge as situated in a social context. The community view of knowledge assumes that knowledge is shared and constructed within organizations through a continuous process of dialog and interactions, and that knowledge is imbued with routines, standards, and with day-to-day practices (Brown and Duguid, 1991) (Table I).

The need for a paradigm change was seen when Clawson (1996) argued for a shift from a bureaucratic to a process paradigm in management. As he puts it, in the bureaucratic way of management ‘the boss knows best’, while in the process way of management the “process owner knows best”. In the “process age”:

... we realize that to do anything collectively really well, especially in a service-based economy, we need to engage employees as a whole people and to invite their minds and their hearts as well as their bodies to come to work (Clawson, 1996, pp. 8-9, in Garvey and Williamson, 2002, pp. 21-22).
Garvey and Williamson (2002, p. 22) argue that moving towards a processual view:
... challenges the whole foundation of management thinking.

Similar to them, Spender (1998) treats knowledge not only as an asset as it was discussed in “The ontological view of knowledge” of this paper, but also as a dynamic concept.

Lave and Wenger (1991) focus on “communities of practice”. Community of practice is defined as:

A group or network of individuals who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting with each other on an ongoing basis (Wenger et al., 2002).

Wenger, a leader in community of practice research, defines community of practice along the following three dimensions (in Smith, 2003):

1. What it is about – its joint enterprise as understood and continually renegotiated by its members.
2. How it functions – mutual engagement that bind members together into a social entity.
3. What capability it has produced – the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles, etc.) that members have developed over time.

The roles of formal and informal groupings in organizations have been discussed by Wenger and Snyder (2000). They argue that a community of practice is an informal grouping with the goal of developing members' capabilities, and building and exchanging knowledge. However, it is not clear, how this happens. The community is built upon passion, commitment, and identification with the group's expertise. The community stops functioning if there is no interest in maintaining the group. The role of communities of practice is important in knowledge creation, knowledge sharing, transferring best practices, problem solving, and in developing professional skills (Wenger and Snyder, 2000). Communication plays an important role in knowledge sharing and in the use of knowledge. For Wenger (2000) “knowing . . . is a matter of displaying competencies defined in social communities” (Wenger, 2000, p. 226).

Pór (1998) extends the community view to a wider social context by proposing the concept of “knowledge ecology”. Knowledge is socially contextualized, and knowledge creation depends not only on the content of the shared knowledge, but it depends on the shared context (environment) as well. The elements of knowledge ecology are actionable information, context, synergy, and trust. It focuses on dialogue (interpretation, understanding, shared meaning, and alignment) on feedback that inspires knowledge flows, and on intellectual energy (relationships, trust, and meaning). Skyrme (2003) highly values knowledge ecology and he observes that:

Communities need a supportive organizational environment . . . The whole ethos of a successful community is based much more on a knowledge ecology rather than a knowledge management emphasis (Skyrme, 2003, p. 173).

Similar to Spender (1996b), Tsoukas (2000) focuses on organizational knowledge. However, while Spender indicates knowledge types, Tsoukas' major contribution is that he describes the activities as processes. These activities are improvisation and application at the individual level and codification and formalization at the organizational level. Improvisation is an individual ability to improvise and create new knowledge in action; during improvisation learning takes place, and improvisational (heuristic) knowledge emerges (individual open-ended problem). Formalization is the ability of the organization to produce and disseminate case-based knowledge and share best or worst practices (organizational open-ended-problem). Codification is the organizational ability to collect and systematize facts and rules, which can be codified and became part of formal organizational memory (organizational routine task). Application is an individual's ability to apply formal organizational rules, the ability to put abstract propositional statements into practice in a material context (individual routine task) (Tsoukas, 2000, pp. 25-7).
Tsoukas identified four types of knowledge: heuristic, propositional, instrumentalized, and applied knowledge (Figure 1). He argues that:

... the effective management of organizational knowledge requires that the relationship between propositional and heuristic knowledge is a two-way street: while propositional knowledge is fed into organizational members and is instrumentalized (thus becoming tacit) through application, heuristic knowledge needs to be formalized (to the extent this is possible) and then codified, and made it widely available (Tsoukas, 2000, pp. 27-8).

Automatic knowledge (cf. Tsoukas, “heuristic knowledge”) is created through improvisation; conscious knowledge is relevant in applications; collective knowledge (cf. Tsoukas, “propositional knowledge”) needs formalization; objectified knowledge (cf. Tsoukas, “instrumentalized knowledge”) is the result of codification (Figure 1).

As a sociologist Knorr-Cetina (2001) researched knowledge production in scientific communities, in “epistemic cultures”. Sociology is the disciplinary foundation of the processual view of knowledge:

In her view, knowledge can never be investigated as such, but we must always recognize the absence and lack of “objectivity” in knowledge. Therefore, Knorr-Cetina’s critique of the notion of knowledge is an important contribution to knowledge management as it radically breaks with mainstream ideas on knowledge management (Styhre, 2003, p. 61).

In brief, the community view of knowledge is in the process of emerging. This is a new, exciting, unexplored phenomenon in the knowledge landscape, which may offer new challenges for businesses and it has practical implications for researchers as well.

**Conclusions and practical implications**

The goal of this paper was to identify the emerging types and views of knowledge and to develop a framework to illustrate their interrelationships. The objective of this paper was to show the complexity and emerging character of KM as a discipline rather than to provide a better or universal definition of knowledge because probably, it would be naive and may be not even possible to give a holistic definition of knowledge.

KM is a young and still very fast developing discipline having its roots in many sciences. Knowledge is not a new however, it is a very complex concept and it exists not only in KM but in other disciplines as well. Thus, it is understandable that the same type of knowledge could be called differently or different names of knowledge could mean the same knowledge type. However, it makes the knowledge landscape confusing. The big dilemma what needs understanding is: are we touching the same elephant (i.e. knowledge) and naming it differently or are we touching many elephants (i.e. different types of knowledge) coming from different fields, from different disciplines and naming them the same way (i.e. knowledge)? Because of this complexity we need different views, different approaches, and different methods to understand knowledge better. Researchers need to know what knowledge they are talking about.

It should be noted that this study provides a clear illustration of the knowledge landscape diversity. The concept of knowledge in the KM literature sometimes is controversial. However, it is possible to determine views that help us to make sense. In addition, by mapping out the knowledge landscape the present writer wanted to help researchers to have a clear view of the knowledge landscape. By drawing on an extensive review of the KM literature a framework of knowledge was developed and it is presented in Figure 1.

The proposed framework of knowledge could serve as a compass for researchers to determine what knowledge they are talking about when they do research in the KM field. This framework illustrates how the different views and types of knowledge are related to each other. The framework represents the four major views of knowledge together, i.e. it shows different types of knowledge and their interrelationships. It is important to conclude that: the ontological (reality), epistemological (science), commodity (managerial), and the community (social construct) views of knowledge are not mutually exclusive views, but rather they are complementary to each other. This complementary character of knowledge types are supported by Spender (in Boisot, 1999, p. ix) who favors a pluralist epistemology
that is still unusual among organizational theorists. He argues that we are moving away from the monist epistemologies toward epistemological pluralism and “. . . researchers and managers must recognize the possibility of several different kinds of human knowledge” (Boisot, 1999, p. viii). He values Boisot’s (1999) contributions in defining alternative types of knowledge and then, placing them in a three-dimensional (i.e. abstraction, codification, and diffusion) space called the I-space (i.e. information space) to illustrate their interactions.

In addition to the framework developed by drawing on the KM literature, this paper points out the apparent need to focus more attention on knowledge creation and on community view of knowledge. As shown in this analysis the literature does not quite explain how knowledge is created in communities. Research of this area could provide opportunities for new contributions. Senge et al. (2005, p. 42) refer to Francisco Varela who emphasized the need of “turning our attention toward the source rather than the object” of knowledge. This could indicate the need to explore the community view of knowledge, to switch from a “cognitivist epistemology” to “connectionist epistemology” where knowledge does not reside in each individual’s brain but rather, it is in a system of interconnected people (e.g. in communities). There is a debate about how cognitive and social sciences see knowledge (Mika, 2005). Duguid (2004) (in Mika, 2005, p. 83) argues that while cognitive sciences see knowledge as context free, mostly explicit, model, resource, and transferable in social sciences it is viewed as contextual, mostly tacit, practice, process, and experience-based. The trend in KM research shows a shift in focus toward the community view of knowledge and social embeddedness of knowledge.

Furthermore, the study of the literature showed that there are recent ontological and epistemological debates about knowledge and the creation of knowledge. Some authors (e.g. Knorr-Cetina, 2001; Styhre, 2003; Stacey, 2004) are questioning the assumptions of the “mainstream knowledge management” and they are asking for new assumptions. As a matter of fact, this paradigm change in KM could open opportunities for new contributions as well. Others, like Scarbrough et al. (2005) argue that the information systems communities have been highly successful in “colonizing the discourse of KM” while human resource issues are neglected in the KM literature. However, this ambiguity of discourses in KM provides new challenges, opportunities for a range of professional groups to develop their own distinct perspectives and to contribute.

To conclude, it is obvious that it is always possible to question the selection criteria and the sufficiency of the KM literature studied in this paper. However, the recent author selected the most frequently cited authors and the most important types of knowledge. The literature was selected in a way that the contradicting arguments, different views became obvious (Table I). The selected range of literature is recent, relevant and it helped to determine the four views of knowledge and to create the framework (Figure 1) combining those views and knowledge types. However, the writer is aware of that that this map of knowledge needs continuous updating as the field is developing in a very fast speed.

References


Fuller, S. (2002), Knowledge Management Foundations, Butterworth-Heinemann, Boston, MA.


Macmurray, J. (1933), The Philosophy of Communism, Faber, London.


Skyrme, D.J. (2003), Knowledge Networking, Creating the Collaborative Enterprise, Butterworth-Heinemann, Boston, MA.


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