

Examining ‘Knowledge’ in Knowledge Management Literature in the West and Its Relationships to Nonaka’s SECI Model

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Abstract

This paper aims to examine the trans-nationality and applicability of Nonaka’s theory and his SECI model in particular to the Knowledge Management (KM) context in the West, by looking closely at a body of existing literature that has knowledge per se as a central concern in the West. The examination has done by using the typologies of knowledge in the organization developed by researchers in the West. This has also been examined in terms of the integrated framework presented in the previous issue by the author and related to the types of knowledge treated in Nonaka’s SECI model.

The analysis clearly revealed that Nonaka’s SECI model offers a comprehensive framework for analyzing and integrating the different types of knowledge in the KM context, even in the West. Moreover, in spite of the dynamic nature of organizational knowledge activities, the existing literature related to KM in the West, tended to be quite static in their explanations. The examination suggests that Nonaka’s SECI model would compensate for the weakness of these arguments by presenting the perspective of a *dynamic* process of knowledge creation in an organization, combining different types of knowledge in sequential activities.

Key words: Knowledge, Nonaka's SECI model, Typology

1. Introduction

This paper aims to examine the trans-nationality and applicability of Nonaka’s theory and his SECI model¹ in particular to the Knowledge Management (KM) context in the West, by looking closely at a body of existing literature that has knowledge per se as a central concern in the West. This will be examined in terms of the integrated framework, presented in the previous issue by the author.²

Such literature that has knowledge per se as a central concern has identified the multifaceted and multilayered nature of knowledge, including not only the tacit/explicit (epistemological) dimension, but also the individual/collective (ontological) dimension. The examination will be done by using the typologies of knowledge in the organization developed by researchers in the West such as

Blackler (1995) and Lam (2000). This will be related to the types of knowledge treated in Nonaka’s SECI model.

2. Introducing typologies of knowledge in knowledge management literature

2.1 Blackler’s typology and organizations

By reviewing substantial literature of organization theory and adapted from a categorization of knowledge types presented by Collins (1993), Blackler (Blackler, 1995; Blackler, Crump and McDonald, 1998) identifies five types of knowledge that play an important role in organizations. These are, *embodied*, *encultured*, *embedded*, *encoded* and *embrained knowledge*. By using four of the types identified above, Blackler (1995) further differentiated four models of organizations according

Emphasis on collective behaviour	—emphasis on embedded knowledge	—emphasis on encultured knowledge
	Knowledge-routinised organizations	Communication-intensive organizations
Emphasis on contributions of key individuals	—emphasis on embodied knowledge	—emphasis on embrained knowledge
	Expert-dependent organizations	Symbolic analyst-dependent organizations
	Focus on familiar problems	Focus on unfamiliar Problems

Figure1: Different types of knowledge and organizations (adapted from Blackler, 1995)

to their focus on problems (familiar issues (a routine kind) vs. unfamiliar issues) and ontology (individual vs. collective effort)(see Figure 1).

2.2 Lam’s typology and organizations

In building on Blackler’ four knowledge types, Lam (2000) also developed a two-by-

two matrix, premised on a clear classification of the epistemological dimension (explicit vs. tacit knowledge) and the ontological dimension (individual vs. collective). Lam (2000) also presents four types of organization models that are classified by dominant types of knowledge, and these are: (1) *Professional bureaucracy* (embrained knowledge

Explicit knowledge	Professional bureaucracy Embrained knowledge Narrow learning inhibits innovation	Machine bureaucracy Encoded knowledge Superficial learning, limited innovation
	Operating Adhocracy Embodied knowledge Dynamic Learning, radical innovation	J-form organization Embedded knowledge Cumulative learning, incremental innovation
Tacit knowledge	Individual	Collective

Figure2: Different types of knowledge and organizations (Adapted from Lam, 2000)

dominant), (2) *Machine Bureaucracy* (encoded knowledge dominant), (3) *Operating Adhocracy* (embodied knowledge dominant), (4) *'J-form' organization* (embedded knowledge dominant) (see Figure 2).

Cooley et al, (2001) summarized Lam's four 'ideal' organizations in relation to their dominant types of knowledge as follows:

- *Professional Bureaucracy* relies on the skills and knowledge of its (professional) employees who predominantly exploit *embrained knowledge*
- *Operating Adhocracy*, in which there is little formalization of behaviour, a tendency to form project teams and which predominantly exploits *embodied knowledge*
- *Machine Bureaucracy* in which most work is simple and repetitive, predominantly exploits *encoded knowledge*

- *J-firm*, predominantly exploiting *embedded knowledge*, derives its capability from knowledge that is *embedded* in its operating routines and shared culture.

3. Examining the five different knowledge types in relation to Nonaka's theory

Whilst there are, as argued in the previous section, certain differences in focus, both Blackler (1995) and Lam (2000) pay attention to similar concerns, namely, the relationship between tacit and explicit and individual and collective knowledge. The following closely examines the five types of knowledge propounded by Blackler and Lam and their relationships to Nonaka's theory.

Embodied knowledge and Nonaka's theory

Embodied knowledge is characterized by individual/tacit knowledge (Lam, 2000) and is action-oriented (Blackler, 1995; Lam, 2000). For example,

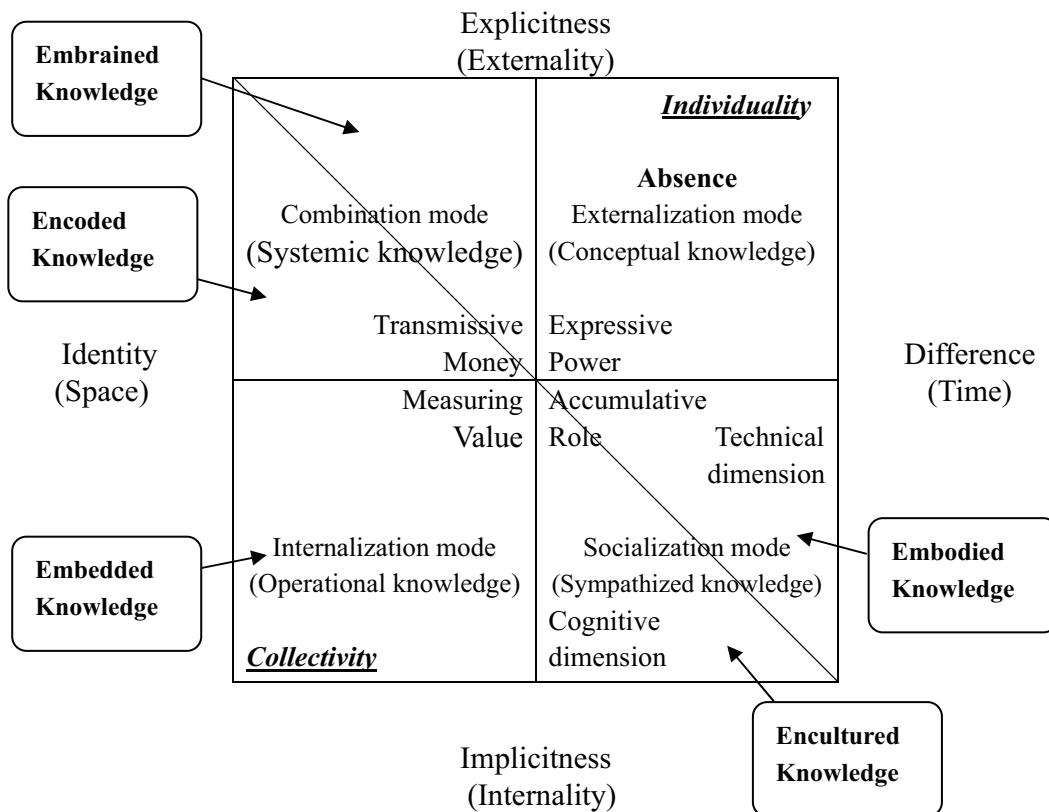


Figure3: Relationships between typologies of knowledge in the West and Nonaka's SECI model (Source: Author)

Alvesson and Kärreman (2001) claim that embodied knowledge can be re-labeled as practical skill, while Blackler (1995) points out that the knowledge of the expert craftsman provides a proper example of embodied knowledge, assuming that embodied knowledge is rooted in specific rather than universal contexts and acquired through observation, imitation, and practice, rather than language or written documents. Lam (2000) asserts that the generation and application of embodied knowledge does not need to be fitted into, or processed through, a conscious decision-making schema. In this sense, it is apparent that embodied knowledge is equated with *the technical (individual) dimension of sympathized (or tacit) knowledge* in Nonaka's terms, which is produced through the socialization mode of knowledge conversion (tacit to tacit knowledge conversion) (see Figure 3).

Limitations of an embodied knowledge-oriented organization

Lam (2000) recognises the organization model of *Operating Adhocracy*, which is a project, team-based organization that has little formalization of behaviour (see Cooley et al, 2001), is an organization that typically relies heavily on embodied knowledge (see Figure 2) and assumes that such an organization is capable of divergent thinking, innovation and creative problem solving. Although the indication of the importance of a project team as an agent of knowledge creation is in line with Nonaka's notion of a 'micro-community of knowledge' (or a cross-functional team) (see von Krogh et al, 2000), according to Nonaka, this type of knowledge (sympathized/tacit) cannot by itself deal with novel problems in an organization, even though this knowledge plays an important role in the processes of organizational knowledge creation. In order to create and amplify new knowledge, Nonaka assumes that sympathized knowledge (therefore embodied knowledge) should be converted to explicit

knowledge through the externalization mode of knowledge conversion and combined with existing explicit (*embrained* or *encoded*) knowledge. Given this, it can be concluded that embodied knowledge is only part of knowledge as represented in Nonaka's theory (again, see Figure3).

Encultured knowledge

Encultured knowledge refers to the process of achieving shared understandings (Blackler, 1995), beliefs and norms (Alvesson and Kärrenman, 2001), based on an assumption that this type of knowledge is produced and shared through social and collective processes, rather than computer processing or individual cognition. Blackler (1995) also assumes that 'community-intensive organization' is dependent on this knowledge, emphasizing the importance of the roles of language in such an organization (see Figure 3). Alvesson and Kärrenman (2001) and Starbuck (1992) stress that knowledge in an organization must be fine-tuned depending on social practice and cultures, rather than by horizontal behavioural control. Robertson and Swan (2003), in their literature review of KIFs, also point out that functionalists, such as Schein (1983), assume the development of an organizational culture mediates the inherent tensions such as between autonomy and control and efficiency and uncertainty, around knowledge work. What all the researchers seem to imply is the importance of (encultured) knowledge which is created through social interaction, which in turn builds mental organizational foundations, mediating inherent tensions and generating social norms.

Encultured knowledge and Nonaka's theory

Although encultured knowledge is similar in its emphasis on social interaction to *the cognitive (collective) dimension of sympathized (tacit) knowledge* in Nonaka's terms (see Figure 3), the author does not emphasize the role of language itself in the

mode as Blackler did. Alvesson and Kärrenman (2001) claim that many versions of KM, including approaches which focus on the social nature of knowledge and social relations, come close to an approach to organizational culture focused on encultured knowledge. However, when viewed from Nonaka's perspective, it seems clear that, although encultured knowledge (or the cognitive dimension of sympathized knowledge) serves as a foundation of knowledge creation in an organization and is usually created at the first stage of the knowledge creation process, the above is again only one type of knowledge from the four modes of knowledge conversion in Nonaka's SECI model.

Embedded knowledge and Nonaka's theory

Embedded knowledge is the collective form of tacit knowledge (Lam, 2000) and resides in 'systemic routines in the relationships between, for example, technologies, roles, formal procedures, and emergent routine' (Blackler, 1995) and is, therefore, often referred to as *organizational routines*. For example, Nelson and Winter (1982) argued that (embedded) knowledge is retained as 'routines' in a firm, which are 'regular and predictable behavior patterns'. Strategic management researchers regard internal embedded knowledge as unique and inimitable resources in a firm and as a sustainable competitive advantage for the organization (see e.g. Prahalad and Hamel, 1990).³ Embedded knowledge corresponds to *operational knowledge* in Nonaka's terms and is created through the internalization mode of knowledge conversion (see Figure 3).

Limitations of embedded knowledge-oriented organization

Pentland and Rueter (1994) argue that the notion of routines as embedded knowledge is *static* and executed without explicit deliberation or choice. This is the limitation of the literature which focuses on embedded knowledge because

it does not explain how to actually create this embedded unique resource in a firm. Zollo and Winter (1999) label these kinds of static routines as *operational routines* and claim that in a context where technological, regulatory and competitive conditions are subject to rapid change, there is a need for a shift from operational routines to *learning routines*, which involve the mechanisms of knowledge evolution. Nonaka argues *learning routines* (operational knowledge) are constructed through a series of knowledge creation processes such as the knowledge conversion modes. In this sense, Nonaka's theory supplements the theoretical weakness of the KM approach as it focuses on embedded knowledge.

Encoded knowledge and Nonaka's theory

Encoded knowledge is 'information conveyed by signs and symbols' (Blackler, 1995), and exemplified by books, manuals, recipes, written rules and procedures and easy to transmit, for example, electronically. This type of knowledge is in line with collective *systemic knowledge* in Nonaka's theoretical framework, which is created through the combination mode of knowledge conversion (see Figure 3). Lam (2000) assumes that an organization model of *Machine Bureaucracy*, in which most work is simple and repetitive, depends heavily on encoded knowledge (see Figure 3) and the author suggests that although it shares many common characteristics with the Professional Bureaucracy model, it relies on 'collective standardized (explicit) knowledge' which contributes to the efficiency and stability of an organization. As argued in the previous section, an IT driven-approach to KM is exemplified as this model because of its reliance on encoded knowledge.

Limitations of encoded knowledge-oriented organization

Whilst advocates of this approach believe that IT contributes to KM, from the viewpoint of Nonaka's

theory, the model, as already argued, plays a limited role in the process of organizational knowledge creation. In short, this is partly because a large area of knowledge, such as tacit knowledge, is lost in the processes of translation to encoded knowledge through IT/IS tools and partly because the model is unable to cope with novelty or change since this is a structure designed to address routine problems because it utilizes only existing knowledge.

Embrained knowledge and Nonaka's theory

Embrained knowledge is characterized by individual/explicit knowledge and by abstract theoretical reasoning (Lam, 2000) and is dependent on the individual's cognitive ability (Blackler, 1995). This abstract embrained knowledge enjoys a privileged social status within Western culture (Nonaka and Takeuchi, 1995; Blackler, 1995; Lam, 2000). In the early stages of the emergence of the knowledge society, many commentators concerned themselves with embrained knowledge. For example, Drucker (1993) argues that a *knowledge worker* who has systemic knowledge and specialist skills (therefore embrained knowledge) can contribute to enhancing productivity in a firm. This is, according to Drucker, because highly specialist knowledge plays a crucial role in addressing novel problems. Reich (1991), another influential commentator in the West, emphasized the emergence and expansion of *symbolic analysts* in a new era, who solve, identify and broker problems by manipulating symbols with specialized (embrained) knowledge. Both Drucker and Reich assumed (embrained) knowledge is developed mainly through a high level of formal education, which is characterized by the abstract stance of pedagogy. Embrained knowledge corresponds to (individual) *systemic knowledge* in Nonaka's terms, which is created through the combination mode of knowledge conversion (see Figure 3).

Limitations of emphasising embrained knowledge

Lam (2000) points out the limitation of embrained knowledge acquired through external educational institutions and professional bodies.⁴ According to Lam, *Professional Bureaucracy*, which is reliant on embrained knowledge, plays a limited role in addressing novel problems in an organization because in such an organization the use of tacit (experience-based) knowledge and acquired judgmental skills tend to be restricted within the boundaries of educational institutions or professional bodies. In other words, professional experts tend to interpret specific situations in terms of general concepts and place new problems in old categories. This insight into embrained knowledge is in line with Nonaka's theoretical assumption. Nonaka assumes that novel problems can mainly be addressed through the socialization and externalization modes, rather than the combination mode of knowledge conversion. Moreover, the authors who emphasize embrained knowledge did not connect it to organizational activities and therefore did not acknowledge the need for 'collective action' (such as social interaction among workers in an organization). On the contrary, Nonaka assumes that 'new conceptual knowledge' tends to be created through social interaction among members of a group triggered by metaphor and/or analogy.

4. Conclusions

In this paper, Blackler and Lam's five types of knowledge and the related existing literature in the West were considered in relation to Nonaka's SECI. The paper, as a conclusion, incorporates those typologies of knowledge into the integrated framework of the TEAM linguistic framework and SECI model (see Figure 3).

Figure 3 clearly reveals that Nonaka's SECI model offers a comprehensive framework for analyzing and integrating the different types of

knowledge in the KM context, even in the West. The figure also suggests that few written sources mention *conceptual knowledge* (created through the externalization mode of knowledge creation) in Nonaka's terms in the KM context in the West. Moreover, in spite of the dynamic nature of organizational knowledge activities, the arguments presented by Blackler (1995) and Lam (2000) and the existing literature related to KM tend to be quite static in their explanations. In other words, their arguments fail to address the way in which the different types of knowledge are sequentially created and related in an organization in a dynamic way, as Nonaka did, using the concept of the 'knowledge spiral'.⁵ This suggests that Nonaka's SECI model would compensate for the weakness of these arguments by presenting the perspective of a *dynamic* process of knowledge creation in an organization, combining different types of knowledge in sequential activities.

Notes

- 1) Nonaka's theory, and his SECI model in particular, was introduced and analysed in the previous paper (see Yamanashi Global Studies No.6).
- 2) In the previous paper (see Yamanashi Global Studies No.6), in addition to the examination of the relationships of various concepts between Nonaka's theory and organization studies in the West, it also created an integrated framework from the TEAM structure and Nonaka's SECI model (see p31, Figure 4-1). This paper will be examined in terms of the integrated framework.
- 3) Prahalad and Hamel (1990) define *core competence* (embedded knowledge), which is the key notion of their analytical framework, as the collective learning in the organization, especially for coordinating diverse production skills and integrating multiple streams of technologies. Interestingly, they use many case studies of Japanese firms such as Honda, Sony, NEC and Canon, regarding such Japanese firms as successful examples of companies which have led disparate businesses to coherent embedded competence.
- 4) Lam regards an organization that derives its capability from the formal 'embrained knowledge' of its highly trained individual experts as the *Professional Bureaucracy* (see Figure 2).
- 5) See Nonaka (1991)

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