

KNOWLEDGE DYNAMICS – THE NEW CHALLENGE IN KNOWLEDGE MANAGEMENT

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ABSTRACT: The dyad explicit knowledge-tacit knowledge, has been present in the Western thinking for centuries, while the Eastern thinking perspective is one of oneness of body and mind, of emotional and cognitive knowledge. That means to recognize emotions as knowledge, and to give equal chances for them to parallel the cognitive knowledge. The purpose of this paper is to present the new challenges emerging in the field of knowledge management. One of them is the new perspective on knowledge, the dyad of cognitive knowledge-emotional knowledge. The transformations affecting both tacit and explicit knowledge can be transposed to new, wider concepts of cognitive and emotional knowledge. In our view the most important challenge for the further development of knowledge management field of research is knowledge dynamics, representing the transformations of one form of knowledge into another, and how this dynamics affects the performance of the company.

1. INTRODUCTION

Knowledge has always been very important, as it proves the very existence of knowledge, the main differentiator of human kind from mammals. But in the today environment knowledge have begun to be more important than ever. It became the preeminent economical resource – more important than raw materials, and even more important than money.

Unfortunately, it is difficult to trace the influence of knowledge within the economy because of its multiple influences. The economists view knowledge as a heterogeneous resource having multiple forms, from management reports, library books and going to the water-cooler gossips. In 1991, Pope Joan Paul II, recognized the importance of know-how, technology and skills in his speech, *Centesimus Annus*, saying that if not so long ago the main production factor was land, and after that capital, in the present development of the economy the main factor of production has become the man itself, and more exactly his knowledge [25]. Knowledge has become the main ingredient of everything we do, buy, sell, and as a result the management, sharing, and storing knowledge have become the most important activities both for the individual but also for the organization.

Most of the people believe that knowledge can be easily recognized when encountered but what people do not know is that in fact there are more types of knowledge that a person uses and applies this knowledge in different ways. These forms of knowledge comprise: tacit knowledge, explicit knowledge, cognitive knowledge and emotional knowledge [8].

Over time a lot of attention has been granted to the manner in which the organization creates, protects its knowledge, but, little attention has been granted to the idea of knowledge dynamics. Different types of knowledge interfere and affect the transformations that take place at individual level but also the development of organizational capabilities. Knowledge is interconnected; it develops, and renews itself over time through cognitive and emotional processes.

The difference between the two sides of the world is a topic long disputed by centuries. East is East and West is West, and the difference between them is starting to turn up even on brain scanners [1], [2], [3]. Western culture conditions people to think of themselves as highly independent entities. And when looking at scenes, Westerners tend to focus on central objects more than on their surroundings. In contrast, East Asian cultures stress interdependence. When Easterners take in a scene, they tend to focus more on the context as well as the object: the whole block, say, rather than the BMW parked in the center [15].

Eastern and Western cultures are having different perceptions in terms of knowledge. For western culture is characteristic the old dyad: explicit knowledge–tacit knowledge, while for the Eastern culture is characteristic the new, emerging dyad: cognitive knowledge–emotional knowledge.

The old dyad is a product of the Western culture, in which knowledge is a result of cognition. Descartes used to say: *Cogito, ergo sum!* Actually he created that dualism of mind and body that governed the whole education in Europe.

On the other hand, in the Japanese tradition there is a strong emphasis on the oneness of body and mind. This tradition emphasizing bodily experience has contributed to the development of Zen Buddhism in medieval times. Kitaro Nishida, a prominent Japanese philosopher built up a theoretical system based on Zen experience. For Nishida, the ultimate reality and existence lay only in the acquisition of facts from pure experience, obtained directly by the subject. Thus, the Japanese epistemology tends to value the embodiment of direct, personal experience.

Cognitive knowledge, emotional knowledge and knowledge dynamics are the new main challenges for the development of knowledge management and more and more attention must be given to these concepts as they are becoming the driving forces of knowledge management.

2. THE OLD DYAD: EXPLICIT KNOWLEDGE–TACIT KNOWLEDGE

Analyzing a series of psychological experiments, Polanyi reached the conclusion that in many practical situations a person apprehends the relation between two known events, but only one of them can be expressed in an explicit way. The other one remains tacit [23]. For instance, some individuals have been subjected to shock waves whenever some nonsense syllables have been shown to them. After repeating the experiment several times, these individuals learned to anticipate the shock waves, but they could not explain how they made it. These kinds of experiments used by Polanyi as examples show the structure and nature of tacit knowing. It involves two things, two kinds of knowing, among which there exists a functional relation: “*we know the first term only by relying on our awareness of it for attending to the second*” [23]. The analysis undergone by Polanyi introduced the fact that a person has more than one type of knowledge. There is the explicit knowledge, that can be described in formal language (manuals, expressions), the “know-what”; and there is the tacit knowing, the knowledge that cannot be easily transmitted and expressed. Tacit knowledge is the result of experience, subconsciously processed and integrated in our live. Knowledge in this view can be acquired through direct experience of the body.

Davenport and Prusak [13] recognize that “*knowledge is a fluid mix of framed experience, 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 workers*” [13]. Actually, they underline the fact that

knowledge can be structured (explicit knowledge), and in the same time it is intuitive and hard to capture in words (tacit knowledge). Although the focus is on explicit knowledge, the authors stress also the importance of tacit knowledge, as experience, ground truth, judgment, values and beliefs.

“*If I ceased to think, there would be no evidence of my existence. I am a thing that thinks, a substance of which the whole nature or essence consists in thinking and which needs no place or material think for its existence. The soul, therefore, is wholly distinct from the body and easier to know than the body; it would be what it is if there were no body*” [24]. Thinking in this perspective refers mostly to the explicit knowledge, the component that can be explained, expressed in words and transferred to others. Explicit knowledge is carefully codified, stored in databases and accessed with reliability, fast. Explicit knowledge assets can be reused to solve many types of problems or connect with people who have valuable reusable knowledge.

On the other hand there is tacit knowledge that is relatively hard to code and extract. Tacit knowledge can be defined as “*work related practical knowledge learned informally on the job*” [22]. But, unfortunately, this definition is not complete because it comprises only one part of what tacit knowledge really is, only the “know-how”. Polanyi wrote about ‘tacit knowing’ as a process rather than a form of knowledge, and emphasized the importance of factors such as beliefs, habits and culture, which are essential parts of our capability without us being conscious of them [4]. Tacit knowledge is not just about experiences learned on the job; it also comprises beliefs, values, attitudes, ideals, and elements that are related to the culture of the individual. Tacit knowledge cannot be found in manuals, books, databases and files. Tacit knowledge is automatism that people develop over time, and they do not need time and thinking effort [22], [25]. This is especially easily observed in the case of use of grammatical rules in one language. For example, the French natives express themselves very easy; they do not need a period of thinking time before saying „C’est la plume de ma tante.” The fact that plume and tante are feminine nouns has become an automatism for them, but not the same thing can be said by a foreign person that studies in a French school. The foreigner might need some time to think what is the gender of these words, in order to build a correct sentence from a grammatical point of view [25].

Lakeoff and Johnson [19] have proven that people use metaphors for a better conceptualization of phenomena, thinking models and to create abstract concepts. The metaphors help to understand the phenomena through comparing an abstract level to a fundamental one. Its power consists in its capacity to transfer the familiar sense from the fundamental domain into abstract concepts. Knowledge is an abstract concept. It has no direct referent in the real world. To make it comprehensible, we use metaphor to map elements of things we are familiar with in the real world. Knowledge is not a concept that has a clearly defined structure. Whatever structure it has it gets through metaphors [1]. People use metaphors, analogies, demonstrations and stories to convey their tacit knowledge. Listeners can evaluate the content of the story and the actions and apply the knowledge that is best suited for their job. *“Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. Subjective insights, intuitions, and hunches fall into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual’s action and experience, as well as in the ideals, values, or emotions he or she embraces”* [20]. As shown by Bratianu [12] any concept must have two components: explicit knowledge – obtained through a rational knowledge transfer, and tacit knowledge – obtained through a direct experience. Thus, any concept is actually composed of the dyad explicit knowledge – tacit knowledge.

Andriessen [1] studied two of the most cited books in knowledge management, *The Knowledge-creating Company* [20] and *Working knowledge* [13], in order to determine how knowledge is conceptualized in the two cultures, Japanese and American. He found that in order to conceptualize knowledge the authors used six types of metaphors. The first type of metaphor refers to knowledge as something physical. In this view knowledge is perceived as something with substance, which can be located, moved, converted and transformed. In this category can also be included the knowledge as a resource, knowledge as capital metaphor, intensively used in Davenport and Prusak’s book. Capital is said to be an asset for the future, capital can be invested in and allows for a return. Having more capital is better, capital is something that can be owned and valued financially [2], [3]. Transferring these attributes to knowledge, it is deduced that knowledge is also something valuable, an asset, which can be invested in and from which can gain return. The second type of metaphor is that of knowledge as a wave. Making the analogy with energy, waves, light, knowledge

can be amplified, generated and transmitted. The third type of metaphor is highly used in Davenport and Prusak’s book, knowledge as a living organism. Here knowledge exists, grows, develops, works, judges. Knowledge receives the attributes of a living person. Another interesting aspect of Andriessen and Boom’s [2] study is the conclusion drawn on the analysis of Serenko and Bontis’ list of most cited knowledge management publications. All seven publications, starting with Davenport and Prusak’s *Working knowledge* and ending with Roos’ *Intellectual capital*, have in common the conceptualization of knowledge as a resource metaphor, that is based on the source domain of physical resource for survival. The findings of this study underline the dominant trait of conceptualizing knowledge within the Western part of the world, the segregation of mind from the body. Knowledge, within the Western perspective, is perceived as an asset, they are resources specific to companies, instrumental to value creation within that company [21]. The Asian reasoning is dialectic, always searching a middle way between opposing concepts, while the Western reasoning makes a clear distinction between objects, isolating them from their context and categorizing them [1].

3. THE NEW DYAD: COGNITIVE KNOWLEDGE–EMOTIONAL KNOWLEDGE

Concepts like *cognitive* and *emotional knowledge* have become more and more present in the literature in the last years of research. The focus shifted from concepts of tacit and explicit knowledge to wider ones, cognitive and emotional knowledge. Cognitive knowledge is said to comprise the rational part of the thinking process, the assisted experience, while emotional component of knowledge has been in central stage for some time due to emotional intelligence concept [16]. The concept of emotional intelligence shed light onto another concept, which is gaining more and more power nowadays, emotional knowledge. Emotional knowledge has two dimensions: time of existence, and intensity of manifestation. The first dimension is a quantitative one and it can be measured easily in a psychology laboratory. The second dimension is qualitative in nature and it can be measured more difficult. By contrast, cognitive knowledge has only one dimension which is closely related to a metrics. Thus, the quantity of cognitive knowledge should be evaluated in a different way than the quantity of emotional knowledge. However, at this moment knowledge evaluation is in its early trial and error phases, without any workable method and metrics

[8]. Psychology research revealed the fact that our facial muscles may express seven core emotions, regardless of race, ethnicity, age or gender. One is essentially neutral – surprise. Five emotions are negative – fear, anger, sadness, disgust and contempt. The remaining emotion is positive – happiness. Sometimes, contempt is incorporated into disgust, and thus there remain only six basic emotions [18]. The latest research in cerebral activities evidence that the emotional part of the brain is far more developed than the rational part and this is why the processes in the human brain are rather based on emotional activity than cognitive activity. The emotional part of the human brain is mostly unconscious. In total, less than 0.0005% of the cerebral activity is considered to be conscious activity, evidencing the fact that the humans are far less conscious than expected [18]. As a result of these studies is the fact that the human being is programmed to feel before it acts, and these reactions have an unconscious layer, inexplicable and immediate, thus the difficulty to express verbally the human reactions.

Emotional knowledge comes into play in many situations. Emotional knowledge is mostly used in marketing, in consumer behaviour studies. Gladwell [14] is stressing the importance of emotional knowledge in food tasting: *“when we put something in our mouth and in that blink of an eye decide whether it tastes good or not, we are reacting not only to the evidence from our taste buds and salivary glands but also to the evidence of our eyes and memories and imaginations, and it is foolish of a company to service one dimension and ignore the other.”*

If the Westerners consider the learning process as being exclusively based on cognitive processes, according to Descartes dualism, the Easterners consider the learning process as based on direct experience and filtered by cognitive processes. The Japanese intellectual tradition is dominated by the oneness of humanity and nature, the oneness of body and mind and the oneness of body and self [20]. The Japanese have developed and nurtured a delicate and yet sophisticated sensitivity towards nature. Nakamura, a Japanese philosopher, demonstrated that the Japanese failed to build a rational thought of clear universality exactly because of the failure of separating the self from the nature. Time and space have different perspectives in Japanese culture. Time is perceived as a permanent present opposed to clearly determined and delimited space line in Eastern literature. The space in Japanese art is free from fixed perspectives, and thus there is no need to

draw shadows. Japanese have a tendency to stay in their own world of experience without appealing to any abstract theory in order to determine the relationship between human thought and nature – the oneness of humanity and nature [20].

In Eastern part of the world the concept of enlightenment, being illuminated by gaining wisdom or understanding, dominates the thinking patterns. There is a strong emphasis on the oneness of body and mind, integrated in one entity. Knowledge is not a substance outside, but merely innate knowledge that unifies the man with the world and the society [3]. In Zen Buddhism the ultimate condition for practitioners is to obtain oneness of body and mind through meditation and equilibrated life style. Training students in Zen Buddhism are required to devote themselves to the world of non-logic throughout their learning process; they seek to develop wisdom through physical training. Japanese epistemology tends to value the embodiment of direct personal experience. In the Confucian concept knowledge is seen as the unity of the knowledge and action. Knowledge exists in action. Chinese philosopher, Wang Yang-ming, states that principle and mind are one. Outside the mind there is no principle, and all principles are contained within the mind. The mind can be seen as the originator of knowledge. The master of the body is the mind [3].

4. KNOWLEDGE DYNAMICS

The idea of dynamics of knowledge was first introduced by Nonaka and Takeuchi [20]. The authors underline the dynamics of knowledge creation as a continuous, self transcending process. The same idea of knowledge dynamics is underlined in Western literature, in the works of Davenport and Prusak [13], and Bratianu [9]. *“In contrast to individual knowledge, organizational knowledge is highly dynamic: it is moved by a variety of forces”* [13].

Nonaka and Takeuchi [20] describe the dynamics of knowledge as taking the form of the transformations of one form of knowledge into another according to some laws. The famous model of knowledge conversions describes the transformations that both tacit and explicit knowledge undergo within an organization. The transformations conveyed by the model include: tacit-tacit; tacit-explicit; explicit-explicit and explicit-tacit. The first mode of conversion, the socialization, describes the transformation of tacit knowledge into tacit knowledge. Because tacit knowledge cannot be made explicit using formal language, this conversion mode is more a process of direct transfer of

experience through a non-verbal language. Externalization is the mode conveying the transformation of tacit knowledge into explicit knowledge. The externalization mode is mostly characteristic to scientist, writers and to educational process, where the professor formulates the lectures content according to his or hers life and professional experience. The third mode of conversion, combination, conveying the transformation of explicit knowledge into explicit knowledge is probably the most used process of transferring knowledge and information within an organization but also among individuals. And the last mode of conversion, internalization, is the process typically used by the self-taught persons. They internalize knowledge and develop abilities and habits by valorising this knowledge. The model presented by the Japanese authors has been heavily criticized in the last years. In spite of the fact that the model is presented as transformation modes of one form of knowledge into another, in reality only two of the modes presented respect the conversion condition. The modes that transform one form of knowledge into another are externalization and internalization, while socialization and combination are just modes of interchanging knowledge from one person to another, not respecting the actual condition of conversion. Using these arguments, Bratianu [5] proves that the model is not in essence a cycle of conversion processes. Organizational knowledge changes over time. Harsh [17] underlines the fact that a part of the knowledge from the model presented by Nonaka and Takeuchi is reused throughout the cycle various times, which means knowledge reuse. Organizational knowledge can be increase through knowledge reuses, and thus the need o introduce a third dimension within the mode, that of knowledge reuse [5], [17].

Bratianu and Andriessen better explains this dynamics by considering knowledge as a field of generic forces, representing meanings and feelings [10]. The metaphor of knowledge as energy was introduced in order to explain the dynamics of knowledge at individual level [10]. Thinking about potential energy transformation into kinetic energy, or of the kinetic energy into potential energy, it can be imagined the transformation of tacit knowledge into explicit knowledge and vice versa. In the same way, it was postulated the transformation of cognitive knowledge into emotional knowledge and of the emotional knowledge into cognitive knowledge, based on the thermodynamics metaphor. In the field theory, any non-uniform distribution in time or space generates forces, and any variation of

these forces generates fluxes which tend to produce uniformity.

This is true for the knowledge field as well, and we may coin the concept of cognitive work as a result of variation of cognitive fluxes at the individual level or organizational level. A cognitive work is actually any flux which may generate, or which can be generated by a knowledge field variation. It is a step further from the concept of working knowledge [13]. Also we shall coin the concept of emotional heat, for the emotional flux which has been included or produced as a result of a knowledge field variation [10]. The second law of thermodynamics has many formulations and interpretations. However, the core meaning of this law is that heat can flow naturally from a body with a higher temperature, toward a body with a lower temperature. These two bodies can be in direct contact or not. The reverse process can be done only by performing mechanical work. Using the energy metaphor we may think in a similar way for knowledge dynamics. That means that knowledge can flow only from a higher level of knowing toward the lower level of knowing and understanding.

As depicted from the models presented above, the research in the field of knowledge management presents various models of knowledge transformations and knowledge increase within the company but there are still missing researches concerning the interdependence of knowledge, and the patterns of influence of knowledge transformations onto its dynamics and the impact onto organizational capabilities and performances. Due to its dynamic intrinsic nature, knowledge evolves in time, either leading to the increase of total knowledge, or loss or even increase of obsolete knowledge. This leads to a new challenge within the study of knowledge management, the development of evaluation models of organizational knowledge dynamics.

5. CONCLUSION

The recognition of new concepts such as cognitive knowledge and knowledge as a result of emotions, emotional knowledge, can create the context of a new dyad, cognitive knowledge – emotional knowledge. The concepts introduced are more complex than tacit and explicit knowledge and enlarge the perspective of knowledge field. An aspect that both individuals and companies should focus their attention is knowledge dynamics, of the transformations of one form of knowledge into another, and how this dynamics affects both the organizational capabilities and its performance. The

concept of knowledge dynamics is in its infancy and more attention should be given to interdependence of knowledge and the patterns of influence of knowledge transformations onto its dynamics. These are the challenges that will affect the further development of knowledge management.

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