

## The Triple Helix of the Organizational Knowledge

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**Abstract:** *The purpose of this paper is to present the inner triple helix dynamics of the organizational knowledge. This is a new perspective of the classical view of tacit knowledge – explicit knowledge dyad of the organizational knowledge promoted by Nonaka and his co-workers. The new perspective is based on the metaphor that organizational knowledge is a field rather than a stock, or stocks and flows. It is a complex metaphor using the thermodynamics principles. The organizational knowledge is composed of three different fields: cognitive knowledge, emotional knowledge and spiritual knowledge. These fields are nonuniform, nonhomogeneous and they interact in a dynamic way. Cognitive field contains knowledge about what is, emotional field contains knowledge about how we feel, and the spiritual field contains knowledge about people's aspirations and life values. This new perspective opens a new opportunity in understanding the challenges for the 21<sup>st</sup> century management.*

**Keywords:** *Cognitive knowledge, emotional knowledge, spiritual knowledge, organizational knowledge*

### Introduction

The purpose of this paper is to present a new perspective of the organizational knowledge, beyond the classical dyad composed of explicit knowledge and tacit knowledge. Organizational knowledge means the managerial result of integrating the contribution of all employees knowledge and generating new knowledge at the level of the whole organization. Knowledge is created by people, and it can remain at the individual level or it can be transformed through specific processes in team knowledge and then in organizational knowledge. Nonaka and Takeuchi developed a spiral model of generating the organizational knowledge (Nonaka, 1994; Nonaka & Takeuchi, 1995). This is a two dimensional model using as a reference system the epistemological axis and the ontological axis. On the epistemological axis there are two categories of knowledge: explicit knowledge and tacit knowledge. On the ontological axis there are three categories of knowledge: individual, team and organizational.

Explicit knowledge represents that part of the individual knowledge that can be expressed by using language and symbols. It is like the visible part of an iceberg. The tacit knowledge represents the invisible part of the iceberg, which means knowledge acquired through direct individual experience that cannot be expressed through language. *“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.”* (Nonaka & Takeuchi, 1995, p.8).

On the epistemological dimension, the organizational knowledge is created through four conversions according to the SECI model: socialization, externalization, combination and internalization. Socialization is the process of tacit knowledge exchange, that is the key process in the Japanese companies. In this process sharing knowledge is very important. However, sharing knowledge is based on a culture of trust and generosity, a culture in which each employee feels safe and happy to share his experience with the other employees. Socialization contains also the transfer of best practice inside companies. *“The transfers of best practice are thus seen as dyadic exchange of organizational knowledge between a source and a recipient unit in which the identity of the recipient matters”* (Szulanski, 1996, p. 28). This organizational tacit knowledge transfer has to overcome the difficulty of the internal stickiness (Szulanski, 1995; Szulanski, 1996). Externalization is the conversion process of tacit knowledge into explicit knowledge at the individual level. Considering socialization the process of knowledge creation through experience sharing, externalization is the way the silent knowledge to be articulated into explicit messages and transferred to the other employees through language or images. Externalization is based on different methods like inductive and deductive logical analysis, or metaphors and analogies. Metaphors are powerful tools for constructing semantic extensions and defining new semantic domains. For instance, we may refer to the way different authors used metaphors to define the semantic domain of the concept of “knowledge”, from being considered as an object, to being considered as a field of meanings and emotions.

Combination is the exchange of explicit knowledge in an organizational context. Explicit knowledge is collected from the internal and external organizational environment and then combined and processed in order to generate new ideas and understandings for the decision makers at all levels of managerial decisions. Combination has been highly expanded by the IT Systems

and use of Internet opportunities. Through combination we may create information and knowledge bases with an important role in knowledge intensive organizations. Also, using different open-source methods we can increase innovation and the renewal of the intellectual capital. *“Open-source cooperation is based on the sharing of a standardized algorithm, a logical procedure following a finite set of operating principles, that enable participants to combine their explicit knowledge faster and more effectively”* (Nonaka et al., 2008, p.24). Internalization is a conversion process of explicit knowledge into tacit knowledge, at the individual level. Thus, organizational knowledge has been expended, through combination, and it can contribute now to the learning process through internalization. Organizational learning becomes individualized through internalization. The final result of internalization is new tacit knowledge. Internalization depends on the individual capability of learning and his motivation, but for employees in a company that depends also on the capability of organizational learning and the managerial system of motivating people.

### **The role of *Ba***

*Ba* is a Japanese word introduced in the knowledge management by Nonaka and his co-authors (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka et al., 2008). *Ba* means simply “space”, but in the Japanese language this “space” has multiple meanings: physical space, virtual space, mental space, working space, action developing space, and any combination of all of these meanings. *“We define Ba as a shared context in motion, in which knowledge is shared, created, and utilized. Ba is the foundation for knowledge-creating activity. It is the place where one engages in dialectical dialogue and practice to implement the vision and driving objectives of the firm. Although it may be easier to see Ba as a physical space, such as a meeting room, it should be understood as a multilevel interactive state that explains the interactions that occur at specific time-spaces.”* (Nonaka et al., 2008, p.34). In other words, *Ba* can be interpreted as a shared context that is dynamic and formless since does not depend for its definition on a specific infrastructure configuration. Some authors associate the meaning of *Ba* with the meaning of community of practice. However, their basic characteristics are different.

In an interesting study about the interaction between the internal and external context of knowledge creation, Nestian introduces the concepts of chaotic environment and the importance of attractors in driving the systems behaviour.

In this perspective, *Ba* may be interpreted as a strange attractor that controls actually the whole process of knowledge creation described by the SECI model (Nestian, 2013). In a critical analysis of the SECI model and the role of *Ba*, Brătianu (2010) demonstrates that knowledge transfer can be done only between two different levels of knowing and understanding, like in nature when we consider the heat flux orientation from the body with a higher temperature level toward the body with the lower temperature level. In this perspective, the SECI model leads to a *perpetuum mobile* since knowledge is transferred always at the same levels without any gradient in the knowledge field.

### Changing the knowledge dyad into a knowledge triad

Introducing a new metaphor for knowledge understanding, Brătianu developed a new dyad for knowledge dynamics composed of *cognitive knowledge* and *emotional knowledge* (Brătianu, 2008; Brătianu, 2011a,b; Brătianu & Andriessen, 2008). Cognitive knowledge is the result of the rational thinking and it can be both explicit and tacit. The tacit knowledge in this case is a result of the internalization process. Cognitive knowledge is actually the knowledge conceived in the Western perspective, based on the Cartesian dualism. The emotional knowledge is a result of the sensory system and of the emotional states of our body. Emotional knowledge can be transferred in an organizational context through the body language and face expressivity. Also, it can be transferred through the voice tone and melody. Using the energy metaphor, we may associate cognitive knowledge to mechanical energy and the emotional knowledge to thermal energy. Cognitive knowledge has got only an extensive dimension, while the emotional knowledge has got an extensive and an intensive dimension. New results coming from cognitive science demonstrate that “*Emotions are central, not peripheral, because they drive reason more than vice versa. In essence, we’re not nearly as rational as we would like to think we are.*” (Hill, 2008, p.19).

Recently, some authors consider that our cultural values that are associated to our existential thinking may constitute a third type of knowledge: *spiritual knowledge*. This knowledge is essential both at individual and organizational levels (Zohar & Marshall, 2000; Zohar & Marshall, 2004). Considering these three fundamental categories of knowledge, i.e. cognitive knowledge, emotional knowledge, and spiritual knowledge, we may state that the organizational knowledge is represented by a *triple helix* composed by *cognitive, emotional and spiritual knowledge* that are dynamically interconnected. This is a new

perspective upon the organizational knowledge that we would like to explore within this paper. Thus, we change the old knowledge dyad into a new triad of knowledge that is structured dynamically into a triple helix of knowledge.

### Organizational knowledge fields

Knowledge is an intangible entity that is highly nonlinear (Brătianu, 2009). Any linear metaphor (Andriessen, 2006; Andriessen, 2008) used for describing organizational knowledge would end up with the unrealistic result that organizational knowledge represents a summation or aggregation of all employees individual knowledge. In our view, organizational knowledge results through the action of integrators (Brătianu, 2011a, b; Brătianu et al., 2011; Brătianu, 2013). We introduced the concept of *integrators* in order to explain nonlinear processes in generating organizational knowledge. An *integrator* is a powerful field of forces able to make interacting different elements. These elements must have the properties of connectivity and synergy. Synergy results when the process of integration is highly nonlinear, and the final result is larger than the linear summation of all the elements. In the organizational context, integrators act upon individual knowledge of all employees and transform it into organizational knowledge. At the individual level we consider three fundamental categories of knowledge: cognitive knowledge, emotional knowledge and spiritual knowledge. Each of these categories is under the influence of integrators and it is transformed from individual knowledge into organizational knowledge. Thus, at the organizational level we obtain: cognitive organizational knowledge, emotional organizational knowledge, and spiritual organizational knowledge. The main integrators we consider are the following: technology and associated processes, organizational culture, management and leadership.

Technology and associated processes act on the cognitive knowledge, both explicit and tacit. Explicit knowledge is used in understanding how the technology works and how to structure and manage all associated processes in order to produce products and services. Also, it is used in designing new equipment or production processes. Tacit knowledge is related to the skills necessary to work with these equipment and associated processes. Tacit knowledge means experience and sometimes talent in performing well with high standards technologies.

*Organizational culture incorporates all values, beliefs, symbols, traditions, ceremonies and emotional experiences existent or expressed within the organiza-*

tion in time. The most important characteristic of the organizational culture is that it represents shared values and visions of organization, that shapes than the organizational behaviour. “A set of beliefs and values that become embodied in an ideology or organizational philosophy thus can serve as a guide and as a way of dealing with the uncertainty of intrinsically uncontrollable or difficult events.” (Schein, p.29). This sharing yields an intangible framework for the organizational knowledge field we shall discuss in the next sections. Organizational culture is in the same time an integrator since acts strongly upon individual knowledge transforming it into organizational knowledge, and a result of all these transformation. It is a dynamic reinforcing mechanism. As an integrator, organizational culture acts especially on the emotional knowledge and spiritual knowledge. Thus, organizational culture is a much stronger integrator than technology and associated processes. Since values, beliefs, traditions and emotional events are nonlinear entities, organizational culture is a strong nonlinear integrator with remarkable results on organizational synergy if used intelligently. Organizational culture has a strong inertia force, thus in times of change it becomes an organizational resistance. In the Kotter’s change model, changing organizational culture comes in the last phase, not in the beginning like in the well known Lewin’s model (Kotter, 1996; Kotter & Cohen, 2002).

Management is s strong integrator since it acts on both cognitive and emotional knowledge. Mostly, managers act upon cognitive knowledge and rational decision making. In a generic approach, we may say that “*The term management refers to the process of getting things done, effectively and efficiently, through and with other people.*” (Robbins & DeCenzo, 2005, p.7). Effectiveness and efficiency are cognitive indicators that reflect rational decision making. From a very practical point of view, an organization may have excellent people, but if the management is mediocre and based on rigid old principles, the results at the organization level will be poor. We may say that management in this case is a weak integrator. Also, if managers think in terms of their own interests and not in the organization interests, the final results will be unsatisfactory. In science we have a law of antisymmetry that states that the north pole of a magnet will attract the south pole of another magnet, and it will reject the north pole. In electricity, a small sphere charged with positive electricity will attract a small sphere charged with negative electricity and it will reject a sphere charged with same electricity sign. In management, this law does not apply. It is somehow the reverse situation. I am calling it the symmetry law of management (Bratianu’s law): *The value attracts value and rejects mediocrity. The mediocrity attracts mediocrity and rejects value.* Thus, a very good manager will attract next to him very good people to work with and

will reject people who are not intelligent and well prepared from professional point of view. The reverse is also true. A weak and less prepared manager cannot accept advise from smarter people and thus he or she will reject real valuable people around him or her, and mediocrity will be rule of selection. In this situation, there are no chances for performing effectively and efficiently. A smart and well-prepared manager can be a successful integrator, generating synergy, while a mediocre manager will be a disintegrator. When the manager makes decisions based on negative values, thinking at his own interests, he also is an disintegrator. The Enron case can be an example.

The most powerful integrator is leadership. Leaders have vision and powerful motivational methods. Leaders act primordially upon emotional knowledge and spiritual knowledge. They are able to generate maximum of synergy in a given organizational context. *“Leadership involves influence; it is concerned with how the leader affects followers. Influence is the sine qua non of leadership. Without influence, leadership does not exist.”* (Northouse, 2007, p.3). Leaders may have a transactional or transformational approach. In the first case, they use diplomacy to advance decision making as a balance between different organizational forces. In the second case, they try to change things. Change management becomes strongly associated to transformational leadership. *“The authentic transformational leader is truly concerned with the desires and needs of followers and cares about their individual development. Followers are treated as ends not just means.”* (Bass & Reggio, 2006, p.14). Transformational leaders are able to share their vision with all other employees and to inspire them for organizational changes. This is not an easy task since change is always related to unknown and uncertainty, two powerful forces that creates a lot of resistance from many employees. However, great leaders are successful since they know how to motivate people and how to use emotional intelligence and spiritual intelligence (Zohar & Marshal, 2000).

Knowledge has been interpreted metaphorically as a stock (Andriessen, 2006; Andriessen, 2008), as flows, or as stocks and flows (Edvinsson, 2002; Nissen, 2006; Nonaka, 1994; Nonaka et al., 2008). In the first generation of knowledge management, knowledge has been interpreted as stuff as a natural semantic extension from the tangible asset. *“Knowledge management is about the storage, transfer and migration of knowledge. It treats knowledge as an object, like a book in a library.”* (Edvinsson, p.7). The second generation of knowledge management based its interpretation on the metaphor of knowledge as a fluid and flow. One of the most known definition in this sense is given by Davenport and Prusak (Davenport & Prusak, 2000, p.5): *“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.” Knowledge flow comes as a necessity, as Nissen explains: “To the extent that organizational knowledge does not exist in the form needed for application or at the place and time required to enable work performance, then it must flow from how it exists and where it is located to how and where it is needed. This is the concept knowledge flows.” (Nissen, 2006, p. xx). However, any flow implies fluids. Only fluids flow. Thus, knowledge retains its physical nature as a substance, which means also linearity (Brătianu, 2009). Moreover, in nature and technology any flow is generated by a pressure difference. In the flow interpretation of knowledge there is no such a pressure field, and no pressure difference between the ends of flow. Thus, the stocks and flows interpretation of knowledge is still related to the physical world, which means tangible characteristics.*

A step forward has been done by Brătianu and Andriessen who developed the metaphor of knowledge as an energy field (Brătianu & Andriessen, 2008). In this perspective knowledge is conceived *as a field* spread throughout the organization. It is a high nonuniform and nonlinear field. The nonuniformity of the field generates fluxes of knowledge transfer that are directed in the reverse direction of the knowledge field gradients. This field approach opens new directions for understanding and explaining processes of knowledge creation, knowledge transfer, knowledge transformation and knowledge sharing, which means organizational knowledge dynamics. Considering the complexity of any organization and the different types of knowledge and associated transformations we may think of the organizational knowledge field as being actually composed of several fields that are in a continuous interactions (Brătianu, 2006; Brătianu, 2010; Brătianu, 2011b). We shall consider that the organizational knowledge field is composed of three fundamental fields that are in a continuous interaction, generating the genetic triple helix of the organizational development: cognitive knowledge field, emotional knowledge field and the spiritual knowledge field. They will be presented in the next sections.

### **Cognitive knowledge field**

Cognitive knowledge is may be the most important component of the organizational knowledge since it is composed of all explicit knowledge from employees and the embodied knowledge in the organizational documents, processes and intellectual property. It is the knowledge that fuels the manage-



rial decision making process, and the knowledge used for data bases creation. Cognitive knowledge has been considered by many philosophers as being the only knowledge we have. Descartes remains famous for his synthetic view expressed as: *Cogito, ergo sum!* I think, therefore I do exist. Commenting on this view, Russel (1972, p.565) underlines the importance of thinking as an existential criterion: “*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 thing for its existence.*”

Many others consider knowledge as an individual asset. However, if we take a given technology in a company and all the workers involved in using this technology have the same understanding about how to use it, we may consider that there is a field of cognitive knowledge concerning that technology. The same interpretation can be given for other aspects of developing organizational fields of knowledge. The cognitive field of knowledge is important since it is fundamental for decision making and managers can understand the economic state of their organizations by reading all the data and information provided to them. Also, IT systems use data and information to transfer knowledge through organization, to store and retrieve it, and to communicate internally and externally. The cognitive field of knowledge is based on rational thinking that has been developed through education in schools and universities. In the decision-making theory, the rational thinking is considered to be fundamental and in many in many instances the only way of thinking.

### **Emotional knowledge field**

Emotional knowledge emerged in the knowledge management especially with the works of Nonaka and his colleagues, based on the Japanese oneness philosophy about knowledge. Working together, people communicate through their emotions using the nonverbal and paraverbal languages. According to Nonaka and Takeuchi, “*Highly subjective insights, intuitions, and hunches are an integral part of knowledge. Knowledge also embraces ideals, values, and emotions as well as images and symbols.*” (Nonaka & Takeuchi, 1995, 9). Emotional knowledge constitutes the key factor in motivating people and in creating the shared vision of the company. Emotional knowledge contributes directly to the formation and change of the organizational culture.

In the Nonaka’s model of knowledge creation, emotional knowledge does not appear as an individual type of knowledge. It is considered a part of the

tacit knowledge because of the practical difficulty of expressing it. However, emotional knowledge is much more than just a tiny part of the tacit knowledge due to its role played in organizational communication and in decision making process (Brătianu, 2010; Brătianu, 2011a). As Hill underlines, “*Breakthroughs in science have revealed that people are primarily emotional decision makers.*” (Hill, 2008, p.2).

Decision making is not fully rational and conscious. The adaptive unconscious plays an important part in any decision making. Gladwell introduces in his famous book *Blink* the concept of “thin-slicing” decision making: “*Thin-slicing refers to the ability of our unconscious to find patterns in situations and behaviour based on very narrow slices of experiences.*” (Gladwell, 2005, p.24). It is important now to recognize that mind incorporates both cognitive and emotional knowledge, and that there is a continuous conversion from one form of knowledge into the other form (Brătianu, 2011a, b; Hill, 2008; LeDoux, 1998). As Kahneman explains in a very synthetic way, people developed two modes of thinking that are interacting dynamically: 1) the emotional system that operates automatically and quickly, with almost no effort or sense of voluntary control, and 2) the rational system that operates slowly due to many computations and choices it does (Kahneman, 2011).

### **Spiritual knowledge field**

Spiritual knowledge is the new form of knowledge researchers started to explore. Spiritual knowledge integrates values and beliefs about life and about our own existence (Zohar & Marshal, 2000; Zohar & Marshall, 2004). This category of knowledge has been included by Nonaka in his tacit knowledge explanation. However, its importance for our individual and organizational existence is so high that it is much better to consider it as the third part of the triple helix of organizational knowledge.

Organizational spiritual knowledge is a just a part of the spiritual capital of any organization. According to Zohar and Marshal, “*Our spiritual capital is our shared meaning, our shared purpose, our shared vision of what most deeply matters in life – and how these are implemented in our lives and in our behavioural strategies. It is the capital that is increased by drawing on the resources of the human spirit.*” (Zohar & Marshall, 2004, p.27). In a synthesis, spiritual knowledge reflects the existential purpose of any organization, its employees aspirations and their social responsibility for their doing. Spiritual knowledge

provides the organization with a moral and a motivational framework, it supports and enriches both its tangible and intangible capital.

The cognitive knowledge field, the emotional knowledge field and the spiritual knowledge field constitute together the genetic triple helix of any organization. That means that these forms of knowledge can transform one into another according to some laws we do not know at this moment, but research will discover them. Although the metaphor we used is based on energy fields and their transformations according to thermodynamics laws, in the organizational knowledge case we do not have the requirement of conservation. Knowledge is not under any conservation law. On the contrary, unlike the energy, knowledge can be created and destroyed. Knowledge dynamics reflects the way each form of knowledge can be transformed into another form, and what are the necessary driving forces.

Maybe it would be of interest to recall the fact that the word “spiritual” has a root the Latin word “spiritus” which means “that which gives life or vitality to a system.” That means that spiritual knowledge reflects the life potential of an organization and its capacity to live long enough to fulfil its potential. Many companies die before their 50<sup>th</sup> anniversary, although the lifespan could be of hundreds of years. That happens because their managers stress too much the narrow economic objectives forgetting about the deep meaning of the company existence. In his wonderful book about the living company, Aries de Geus says: *“However, experience is accumulating that corporations fail because the prevailing thinking and language of management are too narrowly based on the prevailing thinking and language of economics. To put it another way: companies die because their managers focus on the economic activity of producing goods and services, and they forget that their organization’s true nature is that of a community of humans.”* (De Geus, 1999, p.9).

## Conclusions

The purpose of this paper is to create a new perspective on the organizational knowledge based on the theory of knowledge fields. In any organization there are three fundamental forms of knowledge: cognitive knowledge, emotional knowledge and spiritual knowledge. Cognitive knowledge tells us about what is and how we can understand and explain what is around us. It is based on our rational thinking and conscious activity of the brain. For many centuries this cognitive knowledge was equated actually with all the knowledge we

have. It is based on the reflective capacity of humans and their language. Cognitive knowledge can be explicit or tacit. Emotional knowledge is about our feelings and emotions and it is expressed by the nonverbal and paraverbal language. That means we can display emotions by our facial expressions, our body language and our voice tone and melody. Emotional knowledge reflects how we feel working in a given company and how happy we are about the results of our work. Stress is a direct result of all frustrations and unhappiness we may have during our work. Spiritual knowledge is about our existence as individuals and employees in a given organization. Also, it is about the vision and mission of that organization.

Cognitive knowledge, emotional knowledge and spiritual knowledge are the three components of the fundamental triple helix of the organizational knowledge, and they are in a continuous interaction and transformation.

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