

Is Tacit Knowledge Really Tacit?

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Abstract: The aim of this article is to increase understanding of tacit knowledge as a phenomenon and also, to specify and understand tacit knowledge of an expert in a given context. In the discourse of organizational behavior, the use of the concept of tacit knowledge and empirical scientific research on it has become more popular only in the 1990s. The strong increase in expert work and knowledge-intensive fields make examining the topic timely and both theoretically and practically interesting. The most significant theoretical contribution of the study is the increase in understanding, as well as, the creation of new knowledge of the contents and the nature of tacit knowledge. Based on our study, it seems that the current division of knowledge to explicit and tacit is not sufficient to describe the phenomenon. It has been proposed that explicit knowledge is visible and “articulated” knowledge that can easily be transferred and codified, e.g., through speech, documents and various information management systems. Implicit knowledge, on the other hand, is “silent”, hidden and non-verbal knowledge that is difficult or even impossible to transfer and express verbally. We propose that tacit knowledge comprises different components, some of which can be articulated and made explicit. Examples of such are individual’s or organizations accustomed lines of action that are based on explicit instructions. On the other hand, individual-specific tacit knowledge that includes feelings, emotions and intuition, individual’s intuitive behaviour or personal relationships, can be considered as “the genuine tacit knowledge” in the sense that it cannot be made visible or transferred. These findings suggest that the interconnectedness of explicit and tacit knowledge ought to be examined further.

Keywords: tacit knowledge, nature of tacit knowledge, components of tacit knowledge, explicit knowledge, organizational culture, case study

1. Introduction

The role of knowledge is highlighted in today’s organizations. Knowledge, knowing and know how are nowadays considered as the most important resources and factors of production in an information society. (Drucker 1993; Karvonen 2001) During the last decades, the amount of expert work and knowledge intensive fields has strongly increased in every industry. Stähle and Wilenius (2006) state that both production resources as well as the ones that create competitive advantage have become more and more intangible. In addition, there are more fields where instead of equipment and production processes the most productive equity is knowledge and its development. This development concerns all the employees. The transfer from a production economy to a knowledge-based economy and from a material property to an immaterial equity requires more efficient and effective use of personal knowledge and know how as those of the whole organization. (Järvinen, Koivisto & Poikela 2002) Consequently, it is important to examine what kind of knowledge is processed, what are its sources, how is it maintained and how the creation of new knowledge could be supported and enhanced.

Knowledge is a multidimensional and ambiguous notion. Different types of knowledge can be identified. The most common division of knowledge is to separate explicit and implicit knowledge from one another. Explicit, exact and observable knowledge represents only a small part of the whole character of knowledge and know how. A great majority of the whole knowledge capital is hidden in people’s experiences, knowing and skills. Consequently, we are talking about knowledge capital that has taken a relatively undefined form. (Stähle & Laento 2000, 28.) Specifically tacit knowledge is understood to yield competitive advantage in an expert organization (Stähle & Grönroos 2002, 48 - 49).

Research so far has indicated that even though tacit knowledge may seem a simple idea, its implications are large and far reaching. If important knowledge is tacit, then it cannot be effectively spread through an organization. This means that useful knowledge will not be able to reach those who need it without direct, face-to-face contact.

In this study, the target phenomenon is tacit knowledge in an expert context. During the last years, the interest in studying tacit knowledge has increased because it is regarded as an explaining factor of expertise (Virtanen 2006, 1). Still, Seidler-de Alwis & Hartmann (2008) point out that for many, tacit knowledge is a new domain about which little is known. The concept of tacit knowledge was first

introduced by Michael Polanyi. He introduced his ideas in a systematic form in *Science, Faith and Society* in 1946. Later he expanded the theme and argued that human knowledge can be divided into two different categories: tacit knowledge and focal knowledge. Everyone has tacit knowledge but it is difficult to define. In organizations, a significant part of knowledge and know how that accumulate through experience, is specifically tacit knowledge (Polanyi 1958, ix; 1966; ix).

To understand the phenomenon of tacit knowledge, Polanyi takes an example from the face-recognition: if we know a person's face, then we can recognize it among thousands, even if we usually cannot explain how the recognition happens. Tacit knowledge can be described as a knowledge people carry in their minds and is, therefore, difficult to access and share. Consequently, most of tacit knowledge cannot be articulated. (Polanyi 1966, 4 - 5.) In most cases, it is assumed that people are not aware of the knowledge they possess or how it could be valuable to others. In the field of organization studies, tacit knowledge has been highlighted in the late 1990's in the literature of knowledge management. According to Grant (2007), the tacit-explicit dimension of knowledge is, in fact, one of the most widely discussed topics in knowledge management.

The aim of this study is to increase understanding of the phenomenon of tacit knowledge. The focus is to specify and understand tacit knowledge of an expert in a given context. We chose a qualitative case study as the methodological approach of this study (See for example Yin 2003; Koskinen et al. 2005; Puusa 2007). Kuronen et al. (2007) state that generally, experience-based knowledge and skills are recognized to be significant only in the environment where they generate. Thus, exploration of tacit knowledge in individual contexts is both justified and meaningful. The data was collected in one Finnish organization operating in the field of education. The case organization is an expert organization regarded as an example of an organization where there are several key employees about to retire during the next couple of years. In the next sections, we consider previous research that has addressed tacit knowledge related specific issues.

2. From explicit to tacit knowledge

According to Polanyi knowledge can be divided into two classes: tacit knowledge and focal knowledge. Polanyi's thought of the twofold nature of knowledge was based on his observation that we can know more than we can tell. It is not easy to say exactly what it means. However, we need both tacit and explicit knowledge to handle things. According to Polanyi, tacit knowledge is necessary background knowledge so that we can handle and develop explicit knowledge. (Polanyi 1966, 4; Polanyi 1964, 144) The essence of Polanyi's theory is that there are two different states of consciousness: focal awareness and subsidiary awareness. Focal awareness and subsidiary awareness exclude one another. Focal awareness includes the object to which the activity or knowing relates and of which one is explicitly aware. The knowledge handled in the subsidiary awareness is tacit knowledge related to the object of focal awareness that cannot be expressed. If we turn our attention from the objects of focal awareness to the objects of subsidiary awareness our activity is disturbed. For example if a pianist shifts his attention from the piece he is playing to the observation of what he is doing with his fingers while playing it, he gets confused and may have to stop. According to Polanyi, unarticulated knowledge is dealt with in subsidiary awareness whose activities include also the combining of the undefinable parts of the phenomenon in hand i.e. of the totality existing in focal awareness. The knowledge related to subsidiary awareness can be regarded as a manual of what should be done with an object at each time. It is indefinable to its holder but, according to Polanyi, the process of knowing lies heavily on it. These two different states of awareness exclude one another in a sense that one can pay attention to only one of them at a time. According to Polanyi, tacit knowledge is situated in subsidiary awareness but it expresses itself through an object in focal awareness. (Polanyi 1958, 55 - 65.)

According to Polanyi, all knowledge is either tacit or is based on tacit knowledge (Polanyi 1958; 1966). Polanyi states that all knowledge has a tacit component. In the other words Polanyi never intended tacit knowledge to be a separate category of knowledge, but rather to be an integral part of all knowing. It is with the help of tacit knowledge that we can know when to trust in explicit knowledge. A document, on the face of it, holding explicit knowledge has also the dimension of tacit knowledge because it is dependent on the cultures, languages and understandings of its writer and reader. Thus, according to some researchers, tacit and explicit knowledge are not counterpoints to one another. They are mostly two sides of the same thing and complete one another. Adopting and applying tacit knowledge requires often the support of explicit knowledge and vice versa. Tacit knowledge guides our choices in dataflow. Based on it, we can disregard a vast amount of unnecessary knowledge

without reacting to it at all. (Polanyi 1958, 87; Polanyi 1966, 20 - 21; Koivunen 1997; Kuronen et al. 2007.)

According to Nonaka and Takeuchi (1995), explicit knowledge is formal and systematic and it can be expressed in words and numbers. Moreover, it can easily be processed by computers, transmitted electronically or saved in databases. Tacit knowledge in turn, is very personal and difficult to make visible because of its abstract character. Tacit knowledge includes subjective views, intuition and perceptions as well as experience, ideas, values and feelings. (Nonaka & Takeuchi 1995; Virtainlahti 2006.) Nonaka and Konno (1998, 42) state that tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or share with others. It is deeply rooted in an individual's action and experience as well as in the ideals, values or emotions s/he embraces. Also Haldin-Herrgård (2004, 14) conclude that tacit knowledge is personal and abstract and that it is possible to share it among people nonverbally through practice and experience. The line between tacit and explicit knowledge is unclear and the use of the concepts is not rigorous. Different researchers mean different things when using the same terms and a researcher may even use the concepts in different meanings in a same study.

Scharmer (2001, 137 - 139) adds one more type of knowledge to the categorization: self-transcending knowledge that is a part of tacit knowledge. By tacit (embodied) knowledge Scharmer means tacit knowledge that the owner is already using. Self-transcending knowledge (not-yet-embodied knowledge) is kind of a pre-stage of tacit knowledge that comes up as sensations, feelings and intuition. According to Polanyi (1966, 23), it has to have been about this kind of tacit pre-knowledge, for example, when even pressed, Copernicus continued stubbornly to examine solar system with sun in the center till he died.

3. The concept and character of tacit knowledge

The etymology of tacit knowledge, *tacitus*, relates to quiet, silent, not speaking, peaceful, unmentioned, unthought-of, undealt with; wordless, secret and unnoticed. When tacit knowledge is talked about, the terms soundless, hidden, implicit knowledge and practical know how, are also used. Tacit knowledge is comprehensively present in a person. It is the skill of hands, the knowledge of the skin and of the deep layers of the brain. (Koivunen 1998, 77 - 79) According to Nyström (2004), tacit knowledge develops as the result of a long experience and it is shown outside as a skillful activity. Also Rastas and Einola-Pekkinen (2001) state that it is especially meaningful to notice that tacit knowledge that has emerged through experiences, defines the way decisions and choices are made in an organization. Tacit knowledge shapes the being and behavior shared by the members of the organization. By understanding tacit knowledge, an organization can build organizational unity and strength. One view is that the strength of explicit knowledge is to maintain strategic and operational flexibility by renewing the know how of the organization actively. (Rastas & Einola-Pekkinen 2001, 46.)

According to Koivunen (1998), tacit knowledge includes all the genetic, bodily, intuitive, mythical, archetypal and experience-based knowledge that we have and that cannot be articulated (Koivunen 1998, 78 - 79). On the other hand, Varila (1994) points out that characteristic to tacit knowledge is that memorizing instructions or learning information structures is not enough in adopting it. Tacit knowledge is developed through personal practical experience. Tacit knowledge is the overall result of failures, corrections, misconceptions and changed ideas. It is nonverbal knowledge that can be expressed in the form of statements. A person can, for example, use a language but cannot express the rules of it. In the context that Virtainlahti (2006) examined, tacit knowledge was very bodily, related to the use of senses.

Kuronen et al. (2007) state that according to some researchers, tacit knowledge is bound to different contexts and time. (Kuronen et al. 2007, 6.) Järvinen et al. (2002) describe tacit knowledge to be "here and now" knowledge which is produced in a specific practical context and is very personal and based on experience. According to them, explicit knowledge is "there and then" knowledge, i.e. it concerns with past events, and with the help of it, a context free theory is aimed at. Tacit knowledge is also called artistry that expresses itself in occupational know how of an expert. It develops as a result of a long practice. It is shown as a skillful, intuitive-like action and it is completely dependent on its holder. (Schön 1983, according to Järvinen et al. 2002, 72.) According to Seidler-de Alwis & Hartmann (2008), tacit knowledge is the less familiar, unconventional form of knowledge that resides

in individual skills, previous experiences of collaborations and their social context. Many of these skills and social arrangements are related to work activities.

To sum up the theoretical part of the article, knowledge can be divided to explicit and implicit. Explicit knowledge is visible, observable and it can easily be transferred and saved. On the other hand, implicit knowledge is invisible, unarticulated and it is difficult to describe verbally and share. The line between tacit and explicit knowledge is unclear and the use of the concepts is not established. Many of the definitions of tacit knowledge are based on Polanyi's much cited definition which he introduced first time in 1958. According to it, "we can know much more than we can tell". In Polanyi's thought there is always something unarticulated behind explicit knowledge and, thus, all knowledge is either tacit or based on it. Tacit knowledge is always present in the skills and processes of an individual or a group. According to Polanyi, it is relevant even if it cannot be articulated or shared. (Mooradian 2005, 104 - 105.) In the discussion of business economics and administration, the concept has become general only in 1990's. It has been defined in many ways. Broadly understood it includes all the genetic, bodily, intuitive, mythical, archetypical and experience-based knowledge that we have and that cannot be expressed verbally. Tacit knowledge can be understood as necessary background knowledge in order to deal with and develop explicit knowledge. This view, however, is not shared by all researchers.

4. Empirical research process and the components of tacit knowledge

The data was collected by using individual theme interviews. Interviewees were administrative officers in one Finnish university. The basis of the choice of the sample was that in regard to the studied phenomenon and the context, administrative officers as extensive experts are an especially interesting group of staff. Expertise is tightly connected to knowledge. Experts have an ability to outline and combine knowledge in a way that it creates coherent entities. In addition, as they receive information they organize it in a functional way. They are typically quick in retrieving and identifying essential knowledge. They are also at ease in processing and applying knowledge. These processes are unconscious and they are extremely difficult to observe or analyze. Through them tacit knowledge expresses itself in the work of an expert. (Kuronen et al. 2007, 13.) The administrative officers that were recruited at the stage when the university was founded are approaching retirement and, consequently, preparations for retaining their experience and know how should be done. On the other hand, also younger officers were chosen in to the sample.

The interviews lasted approximately an hour each. They were recorded and transcribed. We subjected the transcripts to a form of a qualitative content analysis. The interviews yielded a large amount of qualitative data. Analysis process included going back and forth between the corpus and the theoretical framework. From the point of view of the research process, the central concepts are experiences, conceptions, interpretation, understanding and the hermeneutical circle. Myers (2009, 77-78) state that an interpretative case study, that relies on an interpretive and constructivist epistemology, generally attempts to understand phenomena through the meanings that people assign to them.

In the beginning of the interviews, administrative officers described their present field of work and told about their work history. The perceptions of the interviewed officers about their work were very similar. Interviewees thought that, in general, people can identify tacit knowledge in their own work. Although they may belittle their know-how and tacit knowledge or these may have become so routinized that they cannot point these out unless some one else asks about them. Thus, people can, at least to some extent, and are willing to share tacit knowledge when asked but they will not take initiative in it. On the other hand, a new employee might not know the right questions in order to benefit from tacit knowledge.

Based on the analysis, we identified four components of tacit knowledge from the data. The components are experience, mastery of the big picture, expert networks, and social skills. In the following each of them is discussed in more detail.

5. Components of tacit knowledge – experience

During the interviews the experience component of tacit knowledge was brought up in several different occasions. When the interviewees referred to experience they meant the knowledge, ability and skills that had not been attained through education but that were based on the knowledge and skills acquired through experience. The work of administrative officer is very much based on this

experience. Education creates a good and necessary basis for the work but only through experience it is possible to achieve adequate expertise. Later discussed mastery of the big picture and expert networks include to the tacit knowledge attained through experience.

According to the results, with the help of experience an administrative officer knows how to act with certain people. It helps understanding the things that should be emphasized on. In addition, experience makes planning easier when one becomes familiar with the organization and its routines. This in turn, helps predicting the future as well. In other words, by experience an administrative officer has developed an intuitive ability to plan and develop operations further. Moreover, by experience they have collected tacit knowledge about how things have been handled and what have been the consequences. Consequently, they have a broader picture also of the present situations. These conclusions support the idea that time affects the construction of tacit knowledge.

Interviewees stated that the general knowledge of the senior administrative officers about the university has developed in the long run. Their work tasks have increased as well as developed along with the university. So, the tacit knowledge attained during a long career is difficult to transform into explicit and to share. Written instructions and templates of documents enhance, for example the preparation of reports and are, thus, easier to be learned by a new officer. All experience-based knowledge is, however, difficult to transfer despite the instructions. This knowledge is especially valuable because the employee takes it away with him/her when s/he leaves. On the other hand, the interviewees pointed out that universities are at present going through so big changes and reforms that former solutions and ways of doing things are not necessarily relevant anymore. Senior experts can answer questions and show who to turn to if they cannot solve the matter themselves. But without asking questions the bringing up of the tacit knowledge is difficult.

Interviewees stated that new employees bring their own experience and, thus, new ways of thinking and acting to the organization. They are often eager and quick to learn new things. It is worth while to take advantage of the observations made by a new employee in the beginning. S/he may notice things that the permanent personnel have gotten used to already. The interviewees also felt that the experience-based knowledge is best transferred by a real work task and problems are solved as they come up. In situations where more experienced administrative officers have had to talk about and explain their train of thought, a part of the tacit knowledge has come up and a more inexperienced officer may have learned something new. On the other hand, also the experienced officer learns when s/he tries to explain something in a way that the other one understands it. The accumulation of tacit knowledge adds knowledge of both the experienced and the inexperienced employee.

As a conclusion, it seems that tacit knowledge has a cumulative and changeable nature. As a phenomenon it is, thus, dynamic. Based on the data, it would also seem that it is bound not only to an individual but also to the context where it generates and expresses itself.

6. The components of tacit knowledge – mastery of the big picture

All the interviewees brought up that an administrative officer should know the processes in the university more broadly than only those that concern his/her own field of work directly. Thus, the mastery of different entities, of the connections between them and of the scope of influence could be possible. All the administrative fields of general, financial, human resource and study matters have their core processes of which the administrative officers have to have measure so that the tasks of planning and control can be coordinated and organized in the faculty. Usually, the work tasks can be defined in the application notice of a new officer. However, this definition does not yet describe how s/he should act and it does not give competences to the mastery of the big picture. That includes the perception of what is aimed at with higher education politics as well as the familiarity with the science community and the development of its practices.

According to the interviewees, the mastery of the big picture is enhanced if one is well familiar with the organization and with the operative culture of the administration. Being acquainted with the work processes of staff, teachers, researchers, students in the own unit, helps with the mastery of the big picture. It enhances the work of a superior if s/he knows the strengths and weaknesses of each employee. The mastery of the big picture requires good background in theory, all-around education, a situational sensitivity, an ability to connect things and an intuition to outline future happenings. Thus, again with this theme the interviewees pointed out the importance of intuition in applying instructions

and practices. In addition, based on this theme as well, tacit knowledge relates to an individual but also to groups that experts rub elbows with.

7. The components of tacit knowledge – expert networks

Based on the analysis, it can be argued that expert networks become an important component of the tacit knowledge of an administrative officer. Expert networks are often networks of people that have emerged around a certain task, an assignment or a problem. Its operation may have started informally based on the shared relationships between the members. In other words, they can originate informally by the actions of those experts that are willing to collaborate and who work together to learn and solve problems. The operation of the networks is based on the interaction of the experts.

According to the interviewees, expert networks are created from networks both in and out of the university. External expert networks consist of, for example, other universities in Finland and especially the administrative officers in their faculties. Internal expert networks include mainly experts in central administration and administrative officers in other faculties. Through experience the administrative officers have formed a broad collaboration network especially inside the university that is useful in their every day work. The social tacit knowledge of an individual shows itself in the fact that s/he knows the right people and can create a network him/herself that acts as a pillar when things get complicated. Because it is not possible to control and know everything by oneself it is important to know who one can turn to in each situation.

The interviewees pointed out that, in addition to expert networks, it is important to be familiar with the whole acting environment and to be able to predict its changes. The acting environment of a university includes among others ministry of education, Academy of Finland, other universities, actors in the neighbouring area, personnel and students.

8. The components of tacit knowledge – social skills

The interviewees stated that they need good social skills constantly in their work. An administrative officer acts in collaboration with teachers, students as well as the members of the faculty and central administration. They work in faculties under the administrative office but, at the same time, they look after the benefits of their own unit. With the new model where the administrative personnel are no longer subordinates to heads of departments but are managed from larger administrative service centers, the superior work has increased. An administrative officer is in charge of the operation of the service center in his/her faculty and acts as a superior to the personnel. Thus, social skills are demanded in human resource management.

Listening to people takes a considerable part of the work time and it has not been written in the job prescription. The officer also acts as a link between different quarters. For example, s/he transmits information about how the personnel are doing to the management of the university. People get tired to the flood of papers as the amount of administrative documents has increased considerably.

9. Summary

The components of tacit knowledge that were brought up from the data are not independent of each other, nor can they be clearly differentiated from each other. Of the components, experience would seem to form the main category that includes the other components. As a category, expert networks are related to mastering the big picture and includes interpersonal relationships and social skills. On one hand, social skills as a component of tacit knowledge seems to be related to the organization, its networks and interpersonal relationships, and on the other hand, through personal qualities and experiences to the individual, the expert him/herself.

The experience component of tacit knowledge includes both knowing how to act with different people and having insight concerning the future. Tacit knowledge does not only include the knowing related to individual's know how but it can express itself in the forms of interaction and collaboration between individuals. These forms have been created as the results of development in relationships and ways of working and they express themselves only in shared situations of acting. (Järvinen et al. (2002, 73) As for the future aspect, in the results, it was presented that the interviewees have through experience developed an intuitive ability to plan and develop their work. For example, the regulations and instructions that guide work are explicit knowledge but to be able to refer to a right regulation or instruction in a right situation or the interpretation and application of them is often experience-based.

Intuition relates also to the social skills of an individual that are formed through experience. On one hand, it could be said that intuition is bound to a person; it is part of his/her personality and, thus, represents tacit knowledge that cannot be transferred to another person. On the other hand, if we believe that intuition and through it tacit knowledge that is bound to a person develops over time and through experience, then we can argue that it is affected by the context where the person operates.

Work community seems to affect the accumulation of tacit knowledge. The performance of experts is usually bound to a certain field, i.e. expertise, like tacit knowledge, is context bound. In a certain context, experts are able to notice broad and meaningful regularities, i.e. to combine large quantities of knowledge by observing things that are unnoticeable or may seem chaotic to an inexperienced eye. The skills of experts are of a great part automatized which characteristically leads to performance that is, at the same time, quick and of good quality. Typically, experts both observe and describe the problems in their field more deeply and at a more abstract level than inexperienced workers do. (Kuronen et al. 2007, 12.) In other words, what kind of a career one has affects on what kind of tacit knowledge is constructed and which components of it are emphasized. Thus, context "guides" and affects the construction of tacit knowledge. If an organization and through that work tasks are quickly changing the importance of experience and knowing the organization is different compared to a situation where the organization and work tasks remain the same. Juuti (2008, 229 - 230) states that if work tasks remained the same year after year it would be relatively easy to transfer experience-based knowledge because the stories of the previous employees to the new ones would guide the construction of their knowledge and identity. The transfer of experience-based knowledge is more difficult when organizations and work tasks change constantly.

In the work of administrative officers there is a lot of tacit knowledge that relates to human relationships and that is either difficult or unnecessary to transfer into explicit knowledge of a group or the whole organization. In the study, it was pointed out that it is not necessarily worth while to burden the newcomer with all the knowledge regarding human relationship. S/he should be given a chance to start with a clean slate. Thus, it is justified to state that it is not necessary or worth while to try to transfer all tacit knowledge. The ability to unlearn some practices should also be developed in organizations. Every new person brings his/her own experiences and background to the work community. Thus, s/he can bring a lot of good and new ideas when thinking is not too much chained, for example, with prejudices or differences in human relationships.

The mastery of the big picture consisted of being familiar with the processes of the university in a broader scale than own field of tasks would have required. Being well familiarized with the organization and the operative culture of the administration enhances the mastery of the big picture. It also helps when one is familiar with the staff of the unit. In the data, the accumulative and changing character of tacit knowledge was brought up. It seems that tacit knowledge in addition of being bound to a person is bound to the context where it expresses itself and emerges. According to Nyström, the know-how of an expert is often divided into practical (experience-based, functional, and contextual), formal (gained through education) and meta-cognitive knowledge. The latter requires examination of one's self and action, reflection. Part of the knowledge is formed in practice through reflection. (Nyström 2004, 6.)

Thus, the targets of tacit knowledge are different. Based on the data, tacit social knowledge relating to an individual and to a group were highlighted. Both conclusions were brought up when examining the experience and mastery of the big picture as the components of tacit knowledge. This leads us to consider the relationship between tacit knowledge and organizational culture which is traditionally divided into official and unofficial part (see for example Schein 1985, 21 - 33; Hatch 1997, 210 - 217; Juuti 1994, 27 - 28; Näsi & Giallourakis 1991, 3 - 4). Visible parts of the cultures are, among other things, ways of doing things, instructions, orders and norms that guide ways of behavior and whose application becomes automated, i.e. they become established ways of doing things that are not questioned. Linde (2001, 161 - 162) points out that besides social personal knowledge, also social knowledge exists. It is held by the group or institution itself. Some social knowledge is explicit, for example, the knowledge expressed in forms, formal procedures, file cabinets, and databases. However, in addition to procedures, there is also tacit knowledge which manifest as work practices, as well the knowledge about how and when these knowledge resources. This kind of knowledge is held by an institution as a whole rather than by individuals who comprise it.

In this study, expert networks formed important components of tacit knowledge of administrative officers. The operation of the networks is based on interaction. According to Hakkarainen et al. (2002, 448 - 458) no one is an expert because they know everything that is required but because they can on the basis of previous knowledge create, often together with colleagues, the knowledge needed in problem-solving. Typical for experts is also that they have multifaceted network relationships through which they can solve uncommonly difficult problems. This sub-theme supports the conclusion that, at least some parts of tacit knowledge are bound to organizational context. Consequently, it is justified to state that tacit knowledge relates to organizational culture. In other words, expert networks are different in different organizations and, thereby, organizational tacit knowledge is organizational specific. So, in addition to being individual specific tacit knowledge can, as a phenomenon, be also organizational specific. The theme of expert network lead us to ask could the context where tacit knowledge is examined explain what kind of tacit knowledge is emphasized: the one bound to an individual or to a group or to an organization?

10. Conclusions about the nature of tacit knowledge

There are solid justifications to the statement that explicit and tacit knowledge can be distinguished. They represent different types of knowledge whose differences, at general level, can be described, for example visible/invisible, general/bound to a context or a person, vindicative/bound to a person and interpretative. It is more difficult to define tacit than explicit knowledge. Also from the research point of view, examining tacit knowledge is challenging. Researchers have become interested in the phenomenon of tacit knowledge much later than in explicit knowledge. Tacit knowledge has been examined in many fields and from different starting points. This has affected the fact that there is no consensus of the definition of the concept or the nature of the phenomenon. The meaning of the concept in every day and scientific languages differ considerably from one another. Consequently, the use of the concept is not rigorous.

It seems that the current division of knowledge to explicit and tacit is not sufficient to describe the phenomenon. It has been proposed that explicit knowledge is visible and "articulated" knowledge that can easily be transferred and codified, e.g., through speech, documents and various information management systems. Implicit knowledge, on the other hand, is "silent", hidden and non-verbal knowledge that is difficult or even impossible to transfer and express verbally. Based on this study, we propose that tacit knowledge comprises different components and types, some of which can be articulated and made explicit (figure 1). Examples of such are individual's or organizations accustomed lines of action that are based on explicit instructions. Behaviour based on intuition or personal relationships represent the other kind of tacit knowledge. In other words, the nature of tacit knowledge varies. These findings suggest that the interconnectedness of explicit and tacit knowledge ought to be examined further. It is theoretically interesting and from a practical point of view, many practitioners contemplate about the means to transfer tacit knowledge or to make it visible. In this task asking questions is essential.

On the grounds of above mentioned, there are parts of tacit knowledge that can be identified, expressed and made visible. Thus, our study supports the idea that tacit and explicit knowledge complete one another and that they have interactive relationship (c.f. e.g. Kuronen et al. 2007.) On the contrary to e.g. Polanyi's (1966) and Virtainlahti's (2006) views that tacit knowledge is necessary background knowledge so that we could handle and develop explicit knowledge, we state that the relationship between tacit and explicit knowledge is not one-way.

As a conclusion, we propose the following regarding the nature of tacit knowledge: Tacit knowledge is *immaterial* and therefore, a highly *abstract* phenomenon. It is also *empirical* (e.g. Rastas & Einola Pekkinen, 2001; Nyström, 2004). By nature it is also *dynamic* (e.g. Virtainlahti, 2006), continually *changing*, which is partly explained by the interplay between explicit and tacit knowledge. Tacit knowledge is often assigned *value*, even beneficial purpose for the individual or the organization. Therefore, tacit knowledge is significant for the practical operation. In other words, it can be assigned a *functional dimension*. For example, Kuronen et al. (2007) highlight the importance of tacit knowledge in the process of decision-making. According to them, making decisions is a central part of an expert work in a dynamic environment. Critical decisions are usually made by experienced experts because others do not have facilities to make decisions that call for deep understanding of the context and related phenomena as well as of the other things related to the decision. Usually, the processing of information has to be done quickly and decision-making requires, among other things, interpretation, combining and applying of tacit knowledge. The importance of tacit knowledge

becomes visible when experts are asked to describe their decision-making. It is very difficult for them to describe in detail, for example, how decision-making is done and how it is affected by the knowledge acquired at that moment and prior to it. Thus, decision-making requires processing a vast amount of knowledge, majority of which is subconscious, tacit knowledge. Consequently, the importance of tacit knowledge for an individual and for decision-making is remarkable. (Kuronen et al. 2007, 14 - 16.)

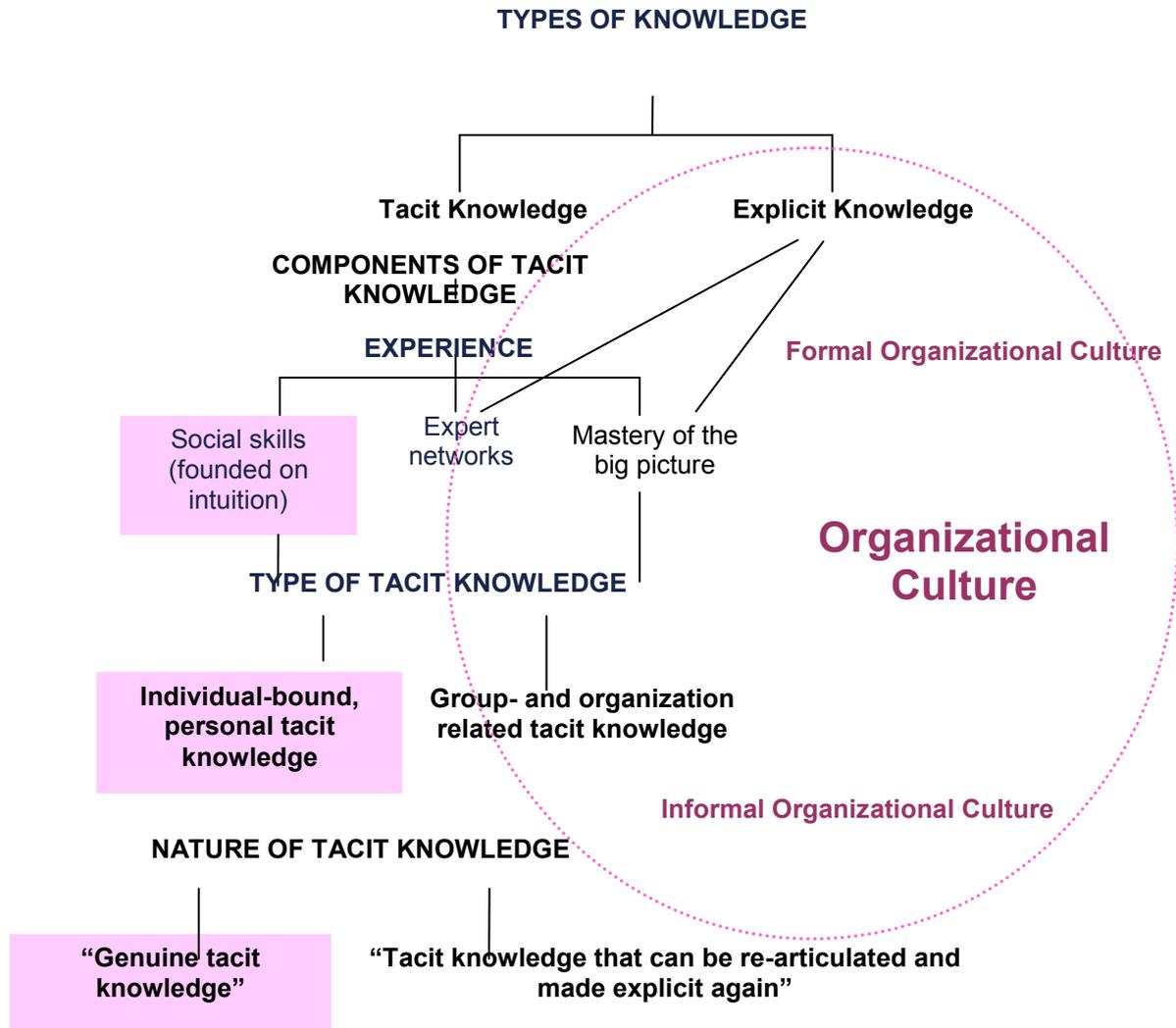


Figure 1: The nature of tacit knowledge and its interrelation with explicit knowledge

Previous research often relates tacit knowledge to individual, not group or organization. The findings of this study support the view that tacit knowledge is *personal* (Polanyi 1966; Nonaka & Takeuchi 1995; Nonaka and Konno 1998; Karvonen 2001) and *subjective* but also *context-dependent* and *organization-specific*. Generally, experience-based knowledge and skills are recognized to be significant only in the environment where they generate. Therefore, tacit knowledge can be understood to be knowledge that is, at least to some extent, embedded in an organizations' culture. It holds value because it is difficult to share with people not embedded in that particular culture. The interconnectedness of organizational culture and tacit knowledge ought to be studied further.

We argue that tacit knowledge can, for example describe the self-transcending knowledge that Scharmer (2001) refers to. This kind of knowledge consists of sensations, feelings and intuition. Based on that this level of tacit knowledge can be regarded as bound to an individual and as "a genuine tacit knowledge" in the sense that it is not possible to transfer it or make it visible. The individuality connected to tacit knowledge is shown at an individual level but the traits of tacit knowledge can be to some extent individual when organizations are compared with one another. Consequently, we state that in addition to being bound to an individual tacit knowledge can also be to some extent organization specific. There are arguments based on previous knowledge that tacit

knowledge is connected to organizational culture. For example Rastas and Einola-Pekkinen (2001) state that it defines how choices and decisions are made in an organization. Thus, it shapes the common existence and behavior of the work community in the organization. By this it is often meant shared values and assumptions of how it is acted in certain situations. These, on the other hand, are matters that in literature are often connected to the concept of organizational culture. For example according to Järvinen (2002, 73), tacit knowledge can hide itself into professional- or organizational culture. In addition Karvonen (2001) states that the interconnection between tacit knowledge and organizational culture has become an important theme and research area in the field of organization and business studies (Karvonen 2001, 129).

It is important to recognize the study's obvious limitations. This was a qualitative case study and due to the nature of this kind of methodological approach, the findings cannot be applied as such to other organizational contexts and populations: By nature, tacit knowledge is personal and context-dependent phenomenon. Therefore the results presented here must be regarded as highly case dependent and their generalization into other types of organizations must be treated with caution; the conclusions presented here are based on findings obtained from one single expert organization and its specific personnel group. The extracts and analysis presented here are our interpretation, our argument for understanding the case in a particular way, just as we are suggesting that the organizational members were arguing for particular perspectives. However, this case study can be used as a basis for conceptual generalization.

11. Finally

Most definitions of tacit knowledge are based on the much cited definition by Polanyi presented first time in 1950's. Polanyi encapsulates the essence of tacit knowledge in the phrase "we can know more than we can tell". On one hand, it maybe, that holding to the original definition have restricted the research. Perhaps now, especially when tacit knowledge is explored in different contexts, more versatile approaches should be applied. On the other hand, Grant (2007) points out, that we can still learn from Polanyi; a fuller examination of his work could be used to raise questions about some approaches to knowledge management. In addition, Grant continues, there seems to be only a little consistency in the use of Polanyi's actual work and it has frequently been misinterpreted. (Grant 2007, 173 - 174, 177 - 179).

The relation between the concept of tacit knowledge and related concepts is still somewhat unclear. For example, tacit knowledge is also called *artistry* that expresses itself in the professional know-how of an expert. It is developed as a result of long time practice and it is shown as skillful, intuitive action and it is entirely dependent on its holder. (Schön 1983, according to Järvinen et al. 2002, 72.) From this perspective, the concept of tacit knowledge is brought to the discussion concerning knowledge management. Different approaches to knowledge management as well as conceptual unclarity have created obstacles to bringing it to practice. Moreover, the concept of knowledge management has not yet been established either. (Sydänmaanlakka 2007, 136; Viitala 2005, 9.) Consequently, more theoretical and conceptual research is needed in order to better understand these concepts. (Mooradian 2005, 104 - 105) Moreover, at least in the field of organization studies, the amount of empirical research concerning tacit knowledge is limited. In addition, most of the empirical data has been gathered in factory context. However, as a phenomenon, it exists in all kinds of organizations. This study was an example of tacit knowledge in an expert organization. In order to understand the phenomenon better, more empirical data needs to be gathered from different contexts.

In many research, tacit knowledge is linked to an individual rather than to a group or an organization. The findings of this study support the view that tacit knowledge is *personal* and *subjective* but also *context-dependent* and *organization-specific*. Generally, experience-based knowledge and know-how are recognized to be significant especially in the environment where they generate. According to this study, tacit knowledge seems to have a strong connection to organizational culture. This interrelation should be studied further.

From a practical point of view, further research-based knowledge is important because many organizations are looking for practical knowledge on ways to make tacit knowledge visible and transfer it. This study acknowledges that posing questions is vitally important in attempts to understand tacit knowledge and make it visible. On the other hand, all tacit knowledge is not possible, nor necessary, to transfer.

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