LUND UNIVERSITY
School of Economics and Management

**Master programme in Economic Growth,
Innovation and Spatial Dynamics**

Tacit Knowledge: How Do We Interpret It?
A Qualitative Study of Knowledge Management in Knowledge-Intensive Firms

Marco Del Canale

marco.del_canale.772@student.lu.se

Abstract: Knowledge is an element considered by common consent as strategic for innovation but at the same time it is quite confusing and ambiguous. New approaches of management are less top-down orientated and more dialogical: they can enhance a successful transfer of tacit knowledge. Small companies interpret and transfer tacit knowledge in a "silent" way, namely the methodologies to transfer it are embedded and not formalized: this can lead to problematic losses of know-how (the skill of an individual to do a particular task) in the future. Their procedures are compared to the ones followed by a company which manages knowledge centrally and which strongly believes in a possible transfer of tacit knowledge through a previous conversion of tacit to explicit knowledge, according to different methodologies. As well, concerning the transfer of tacit knowledge, IT tools play a determinant role even though there is a rooted skepticism whether in the future they can be a substitute for face-to-face contacts, giving the knowledge a social nature. Finally, the role of intuition in strategic decision making (SDM) is studied, understanding that personal ideas concerning an action often hide individual tacit knowledge and, even though this is linked to power and prestige, knowledge-intensive firms hardly work in order to let personal insights emerge.

Keywords: Knowledge, Tacit/Explicit Knowledge Transfer, Information and Communication Technology, Intuition, Power, Sharing

TABLE OF CONTENT

1 INTRODUCTION

1.1 BACKGROUND

We have to be aware that we live in the "knowledge" era. Over the past years the flow and the communication of knowledge between individuals has been harder and there have been several barriers. With increasing scientific discoveries, products and processes in the organizations are more elaborate, or knowledge intensive: people rely on deeper skills than before. Knowledge is becoming an asset (Alvesson, 2002) and as such it has to be protected and treated carefully. It has a huge perspective of development and, because of its broad nature, it is often confused: everything can be knowledge and misunderstandings are quite common. If an issue is so broad and vague as it is conceived in the related literature we have first of all to acknowledge that our mind should be flexible and open in defining it and in recognizing its limits. Such an important matter asks for a re-definition of the way with whom we can manage this asset. We are questioning therefore old management theories which are characterized by hierarchical and top-down perspectives (Alvesson, 2004, p. 190). We live in a time, on the other hand, where we cannot blindly rely on too many unilateral and objective approaches and be merely goal-oriented. That does not mean that we do not have to look for goals: they are the main drivers for the productivity and they will lead organizations' actions indefinitely. On the other hand, we have to consider a more "dialogic" view of the management, where the reality is socially constructed and the change is interpreted as a self-organizing and dialogic process between people (Bushe and Marshak, 2009). In opposition to a strictly objective reality, we are hypothesizing a more "subjective" way of viewing the business, and this view is difficult to categorize. Here, in our opinion, the tacitness of the knowledge resides. In other words, during strategic business decisions, often managers are led by something which is not formalized and which does not rely on common information or data: this is the know-how and the skill of an individual to do a particular task in a very precise moment (Brockamnn and Anthony, 2002). In this work we will try to understand what really is the relevance of tacit knowledge and if it is possible to store and transfer it with some tools, using both face-to-face contacts and Information Technology.

More precisely, we will try to understand if, in this era of networking and social contacts, IT tools (such as email, voice mail, and tele-video conferencing) can be substitutes or complementary tools to procedures like company relations and face-to-face contact for a proper transfer of tacit knowledge. We have to acknowledge that if companies do not find the right methodologies and procedures to share and transfer knowledge, unpleasant consequences for the organization's success can occur, such as losses of strategic know-how. A huge focus should therefore be on the way with whom companies avoid or at least limit the risk of losses during the transfer of such an important asset, the knowledge. During this study, our approach comes from a dialogic interpretation of the management, as the one formulated by Bushe and Marshak, because we think that this perspective can catch some important nuances that a hierarchical and top-down conception of the management would fail to understand.

1.2 PURPOSE AND RESEARCH QUESTION

As we said before, knowledge has become a relevant issue in business and especially its tacit part asks for much attention. In this research we will try to understand how the knowledge is conceived by managers and to what extent the portability of tacit knowledge can be possible.

We want to focus on the approach that companies have to this big issue, both concerning explicit knowledge and tacit knowledge. We decided to focus on these two specific elements because much attention of companies on the ways to store information and data (explicit knowledge) means that the organization recognizes the importance of knowledge.

Moreover, we focused on the ways of transferring tacit knowledge to understand to what extent a proliferation of this element can be possible. We should stress that a common opinion is that explicit knowledge (what can be codified) can be easily transferred via documents, data and IT tools and, in contrast, tacit knowledge (know-how of the people) entails some problems.

Besides, we also have to understand that a clear distinction between the two could lead to misunderstandings since they are strictly connected and sometimes complementary.

Before analyzing different kinds of knowledge, we will have to define the knowledge itself, and we will discover how ambiguous it can be. Very different and broad definitions have been formulated, and we will analyze the most convincing ones. Then, we will have to deal with another matter: how to manage the knowledge. How can it be possible to manage something that is both so relevant and so ambiguous? Our work has the purpose of clarifying most of these matters, building a bridge between the abundant literature and the data gathered from interviews with managers. Having said this, our research question is the following: how do companies interpret and properly transfer tacit knowledge between individuals without the risk of losses of know-how which can endanger the organization? We are particularly interested in how tacit knowledge transfer is interpreted in both the literature and the business environment and, since in the last years issue as contacts and networks are becoming strategic day after day, we want to understand what the role is of Information and Communication Technology in this problem. In other words, we will try to understand whether IT can be a complete substitute for the knowledge transfer or people still need face-to-face contacts and relationships. Thus, if IT tools have the capability to create efficient networks, they can be seen as an improvement, and we want to understand if that could have the power to replace relationships for a transfer of knowledge in the future.

As we said, in order to answer to these complicated questions we need to deepen the fields of the knowledge, its definition, and its management. Only with a clear understanding of these topics we can critically review the literature and interpret the data coming from the interviews.

Our challenge will be to have a deep understanding of the differences in both the literature and in the organization members' thoughts. With these insights, our research question(s) will be answered.

1.3 <u>METHOD AND SELECTION</u>

Essentially, the study will follow a deductive approach, where theory and hypothesis are developed and the research is conducted in order to test the hypothesis (Saunders et al., 2007, p. 122). Nevertheless, we had to adapt this methods to our needs. We did not want to test specific hypothesis but, on the other hand, to have confirmation or not of the insights that the literature review provided us. A wide body of papers has been reviewed and critically interpreted in a constructive way. Some ideas have been formulated, concerning both the feasibility of the transfer of tacit knowledge and the choice between different knowledge management perspectives, if we assume that knowledge can be successfully managed by organizations.

The collection of qualitative data through semi-structured interviews will test our ideas and prove to which extent the empirical managerial environment follows the literature fundaments. However, we will not merely follow an unilateral deductive approach: we will conduct the research also using some elements of an exploratory study, which does not have a strong power to test hypothesis (Scott, Svensson, Quaranta, 2011). Apparently it seems a contradictory situation but the combination of both methods is justified by a broad aim of the research. We need a more "scientific" view which is provided by a deductive approach in order to have a path to follow during the thesis, which will help us not to go far away from the point. At the same time, our data collection will be qualitative and the field that we are exploring (the knowledge management) is rather new: for these reasons an explorative approach will help us to get a better understanding of the topics. In this sense a combination of both a deductive approach and an explorative study can be viewed as complementary as completing each other.

Concerning the data that we gathered, they are basically qualitative and coming from in-depth semi-structured interviews and phone calls taken in five different knowledge-intensive firms.

The tool of the semi-structured interview can fit the best our aim inasmuch as there is not a pre-determined order to follow and some questions can vary, even if a basic list of questions should be followed (Saunders et al., 2007, p. 312). A list of questions has been listed, covering different areas, and during the interviews it happened that the order could be reversed or that new insights could come from the respondents. This has been interpreted as a satisfying result because of the empathetic relationships which developed between interviewer and respondent.

The interviews have been taken in three different small companies in the region of Skåne in Southern Sweden with face-to-face meetings where the interviews have been recorded in a digital support and in a big international company, in Skåne as well, with a phone call. Moreover, the other collaboration has been done with an international company in Brussels, Belgium, via the tool of the phone call. A total number of eleven interviews has been done. The sectors of the companies are medical, pharmaceutical, chemical and food/nutrition. A simple reason relies under this choice: all the companies we collaborated with can be conceived as knowledge-intensive firms. More precisely, as Alvesson states (2004, p. 17), the term knowledge-intensive is referred to companies whose workers deal with science-based tasks that call for a relevant use of judgment and where innovation plays a determinant role. We believe that the sectors that we analyze can fit Alvesson's definition of knowledge-intensive firms. Moreover, we wanted to compare firms that

do not manage knowledge through a specific department to a company (the one in Brussels) which manages knowledge in a particular business area created for that.

We thought that this difference could be relevant in order to understand to which extent companies recognize the importance of a proper management of their knowledge, whether embedded in every area or managed centrally.

2. <u>LITERATURE REVIEW</u>

The literature concerning the issue of the knowledge and the knowledge management is very broad and often quite ambiguous. We will stress how this ambiguity in our opinion is conceived as a resource rather than a barrier to innovation. After a deep critical literature review, what we understood is that our approach should be open and flexible, considering several aspect of an apparently unique matter, trying not to be stuck in unilateral definitions which can confuse our understandings. When we mention the word "critically", we refer to a complicated and long process of literature review, which requires a combination of skills and attitude and whose main aim is to view the past literature with skepticism and with the constant will to question what we read (Saunders et al, 2007, p. 87). Using this particular approach we will not take everything for granted, analyze what are the main scholars' finding concerning the topic(s) and put an emphasis on the ones that we found being the most relevant for our research.

We divided the related literature in five headings. The first one will analyze the concept of knowledge itself, pointing out that a single definition cannot entail all its nuances. In the second heading we will mention some of the different kinds of knowledge that have been found by the scholars and our main focus will be on the difference between tacit and explicit knowledge. The third part will introduce the concept of Knowledge Management (KM), and our basic question will be whether organizations can succeed in such a tricky process or not. In the fourth heading, a short analysis will be done concerning the storing of the knowledge (the explicit one). Finally, in the last part we will concentrate on the transfer of the knowledge, especially concerning the tacit one, which is our main interest in the study. We will analyze both the indicators that cause and allow a proper transfer of such knowledge and the methodologies that are treated in the literature.

2.1) <u>WHAT IS KNOWLEDGE?</u>

As we stated above, the concept of knowledge has been conceived in several different ways and we decided to focus on some of them. A seminal contribution has been provided by Nonaka and Takeuchi (1997) who interpreted knowledge as something embedded in human actions, a result of the flow of information which are in the mind of the people. We will notice how the social role of the knowledge will be a common point in almost all the relevant literature. It is interesting to analyze how the process of knowledge creation has been conceived in the literature. We can

found a process that from basic data can create information and from the latter can reach the knowledge: the last part of the process is helped by experience and personal learning of the individuals (Davenport and Prusak, 2003).

DATA ⟹ **INFORMATION** ⟹ **KNOWLEDGE**

We notice how the complexity of the matter increases during this process: there is a sort of hierarchy between raw data, information and a conscious interpretation according to human beliefs, which is defined as knowledge and has the power of providing important insights to the organizations. Alavi and Leidner (2001) stress that knowledge is information embedded in individuals and it is related to personal judgments and interpretations of the reality: it is "*personalized information*". On the other hand, Tuomi (1999) interprets the matter from another perspective. In his opinion, knowledge exists before information, questioning the existence of simple raw data. We can therefore understand how Tuomi thinks about a reverse process of the one studied by Davenport and Prusak. Our review is not choosing an approach as objective and more reliable, but at the same time we have to acknowledge that we agree more with Davenport and Prusak's opinion, inasmuch as every individual creates his conception of the world starting from data which come from different sources. For that reason we are interpreting knowledge as a final process which involves several steps of previous learning and experiences, and we do not find particular relevance of a knowledge which exists before data and sensorial experiences.

Alavi and Leidner (2001), in a relevant literature review paper about Knowledge Management, state that knowledge can be seen from five different perspectives: an object, a process, a state of mind, a condition to gain information and a capability. We especially share the latter perspective, according to which past experiences stimulate our skills to decide what are the information that we need to consider in decision making (Watson, 1999). Following this perspective, we can have a particular "nuance" of the knowledge as an ability of people of making judgment about the reality. An important contribution has been provided by Alvesson who defines knowledge as a resource, stressing its instrumental use to produce a desired outcome, and at the same time it is understood as a "*socially constructed phenomenon*" (Alvesson, 2004, pp. 50-107), showing the connection between individual and social aspects. We have briefly analyzed part of the literature about the definition of knowledge and we can conclude that the conceptions of it are broad and very different between them. Several aspects have been pointed out by scholars, and to state what can be the best one is not our purpose. We are, instead, showing that we have to consider the ambiguity when we talk about knowledge because it is quite hard to directly both define such a huge matter and to measure or observe it, also because of its tacit aspects (Alvesson, 2004, p. 56).

2.2 <u>WHAT ARE THE DIFFERENT KINDS OF KNOWLEDGE?</u>

In the literature several kinds of knowledge have been found out, each of them stressing on particular aspects.

An important distinction can be done between individual and social knowledge. Alvesson (2004, p. 54), studying Nonaka, points out that knowledge is basically an individual element, but also it depends on the relationship between people. This issue has been mentioned in the previous heading concerning definitions of knowledge. Nonetheless, it is important to stress again how in the literature these concepts have been interpreted as different types of knowledge. Having said that, we argue this idea questioning whether the terms individual and social should be conceived as a difference or as an evolution. Since knowledge is very related to social context, as a socially constructed phenomenon (Alvesson, 2004 , p.107), we believe that we can even make a distinction between an individual aspect and a social one, but at the same time we should acknowledge that the individual part of it, alone, has no power to bring innovation for organizations. In other words, the ontology of the term "individual" knowledge, inasmuch as it is owned and understood by a single person, do not entail broad perspectives. Indeed, we live in a time where the sharing of ideas and insights can be a key factor: focusing on an extreme importance of infertile individual know-how cannot provide the right interpretation of the issue.

The difference between tacit and explicit knowledge is the one which is studied the most in the literature, and we are analyzing it in order to understand to which extent they can be complementary.
Explicit knowledge is defined as something which can be codified in formal structures and can be easily shared with other people (Joia and Lemos, 2009). These formal structures can exist in the form of symbols (data and documents) or embodied in tangible elements (tools or machinery) (Roberts, 2000). We believe that this "kind" of knowledge does not involve a huge commitment in its understanding, nor in his transfer. We are not denying its strategic importance because most of organizations' knowledge is kept with written documentations. We are pointing out, instead, that when we talk about explicit knowledge there should not be relevant problems concerning its very nature. Since this kind of knowledge can be digitalized, it can be transferred without big losses with information technology tools (Johannessen et al., 2001) and this relatively easy spread can improve the company's performance.

Tacit knowledge is, instead, something that cannot be captured or verbalized: a famous and questioned phrase expresses its core: *"We know more than we can tell"* (Polanyi, 1966, p. 4). Moreover, tacit knowledge is seen as something which comes from personal experience, with a high level of subjectivity (Nonaka et al., 2000) and episodic: its construction depends on the association of past episodes. (D'Eredita and Barreto, 2006).
We can therefore understand how this concept is ambiguous and what can be the consequences of efforts to manage and transfer skills that come from past experiences and individual learning.

A clever metaphor about the relationship between explicit and tacit knowledge is showed by Dhanaraj who defines the former as the building blocks and the latter as the mechanisms and the glue for this process of building (Dhanaraj at al. 2004).

Moreover, sometimes the boundaries between these two types of knowledge are very transient. According to Polanyi, explicit knowledge depends on tacit knowledge: *"…Hence, all knowledge is either tacit or rooted in tacit knowledge. A wholly explicit knowledge is unthinkable"* (Polanyi, 1966, p.7). Following this perspective, we can see how the tacit element is always present in both the two types, thus strongly linking the two definitions stated before. The last perspective questions therefore a real independence of the two concepts, finding tacit elements in the explicit one. We will not go any further concerning this matter, since our research question is related to a proper transfer of tacit knowledge rather than misleading discourses.

Nevertheless, a last point which has to be covered is the question whether tacit knowledge is convertible or not to explicit knowledge, in order to reduce the losses of know-how.

The possibilities are both a transfer in toto of that knowledge (we will treat this later) or a conversion, if possible, to explicit knowledge: a formalization and codification of something which is, by nature, difficult to identify. We need to stress again that we are making a difference between a conversion and a transfer which will be the core point from the next headings, and we will see to what extent they can be related. The process of "externalization" would allow a conversion of tacit knowledge to explicit knowledge, for example as articulations of best practices (Nonaka 1994 – in Alavi and Leidner, 2001). An interesting point would be to understand to what extent this conversion could be done, in order to avoid losses of knowledge. Tsoukas (1996) questions Nonaka's approach and he defines it as erroneous because, since tacit knowledge is ineffable and acquired through past experiences, it cannot be articulated but it can only be showed through our actions. Thus, Tsoukas does not believe in the feasibility of a conversion of this kind of knowledge, while he hypothesize a possibility of a transfer of it. We will come back to this point when we will talk about the so-called "attention-drawing" process.

A last aspect of the tacit knowledge is its interpretation both as a conservative element and as an innovative one. Tacit knowledge, with its power of hindering imitation of competitors (since it is something which is difficult to copy), is interpreted as a conservative element (Johannessen at al., 2001). On the other hand, tacit knowledge has been also defined as a strategic issue for the innovation and for the viability (Antonelli, 1999 – in Roberts, 2000). We can therefore notice how knowledge can be conceived from different perspectives which can lead to a great ambiguity.

2.3 CAN WE MANAGE KNOWLEDGE?

As we stressed in the previous parts, the issue of knowledge asks for a big attention when we deal with it. A natural question is whether we can manage properly such a tricky element, if it can be managed. We all have to agree that companies need to have a structured approach to corporate knowledge management to compete in competitive environments (Davenport and Prusak, 2003). Nevertheless managing something which is broad by nature is rather problematic and we have to make different considerations concerning the type of knowledge we are talking about.

Concerning explicit knowledge, elements such as data, information and documents in general can be treated in a comparatively easy fashion. Since this kind of knowledge can be formalized and digitalized, information technology tools can facilitate these procedures (Johannessen et al., 2001). On the other hand, when we talk about tacit knowledge, the matters becomes more complicated. Since this kind of knowledge, entailing personal know-how and attitudes, is sometimes confusing and slippery by nature, things get more complicated and organizations have to deal very carefully with that.

Essentially, knowledge management activities follow three aims: make knowledge clear, foster a knowledge-intensive culture and encourage people to collaborate through a knowledge infrastructure (Davenport and Prusak, 1998). These goals of the knowledge management seem to us quite satisfying and all-embracing inasmuch as they cover both the more explicit part (visibility of the information) and the tacit one, involving culture and networks between individuals.

Moreover, four relevant processes have been found in the literature when companies deal with knowledge management: they are knowledge creation, storing/retrieval, transfer and application (Alavi and Leidner, 2001). As we mentioned above, knowledge creation most of times entail a conversion of knowledge, for example from tacit to explicit knowledge but we are interpreting this conversion as a procedure within the transfer of knowledge, looking for support in the business environment: we think that sometimes the process of knowledge creation is embedded in the process of knowledge transfer, since during the latter people share common beliefs and can "create" new ideas. We believe, on the other hand, that a "real" knowledge creation is a business which belongs to Research and Development areas, investing on scientific matters for the innovation of the company. The four systems that we mentioned above have their peculiar goal of managing organizational knowledge and they basically all are Information Technology-based systems to support people's actions (Alavi and Leidner, 2001). It will be challenging to understand to what extent IT can help in this management: we will find out how easily it can be used concerning a storage of data, while if the focus shifts to the knowledge transfer IT cannot completely manage knowledge all by itself.

In the literature there have been discussed several applications of knowledge management systems (KMS). We will not deepen all of them because it would entail an exaggerate time, and we mention the once which convinced us the most, which is the basic approach with whom we interpret knowledge in the organizations. What we think is strategic when we manage knowledge is to form knowledge networks linking the experts together, in order to share and amplify the know-how of the people (Ruggles, 1998). This is the core of the matter, and we will see with empirical data how the role of networking has become relevant in the last years.

An important aspect is related to which specific kind of approach is the best to manage knowledge. Alvesson stresses the problematic nature of manageability of knowledge, especially according to a top-down, formal and hierarchical perspective: he questions whether a so-objective term can be used to manage a so broad and omni-comprensive matter (Alvesson, 2004, p. 190). He basically questions the role of managers for a proper knowledge management, suggesting that tools like communities of practice or shared storytelling can have a deeper impact since they focus more on social and interpretative contexts rather than using disciplined judgments to join predictable outcomes (Alvesson, 2004, p.194). We can therefore understand that a unilateral and

"old-style" management can lead to a wrong administration of the knowledge inasmuch as the label "management" suggests an idea which can contrast with the more creative, tacit and "personal" part of the knowledge. Thus, we have to acknowledge that if we talk about an explicit and codified knowledge our approach can assume a trust in knowledge management approaches, but if our focus is on issues more related to personal skills, culture and networks the role of management has not the relevance that it is supposed to have. The management perspective that we are following relies on shaping capabilities rather than controlling ones, where activities as coaching and interpretation are relevant, creating meaning for the company members and helping them to make sense of the events (Palmer et al., 2009, pp. 24-31).

2.4 HOW TO STORE KNOWLEDGE

It is important to remind that four basic processes related to knowledge management have been found in the literature, and they are knowledge creation, storage/retrieval, transfer and application (Alavi and Leidner, 2001). We decided to focus particularly on the second and the third because they seem to be the most understandable and not misleading by the corporate environment. When it comes to a knowledge creation, we see it related to another area, which is the Research and Development, and when we talk about knowledge application, we interpret it as linked to the knowledge transfer: an effective transfer has also to provide a proper application of knowledge. What we stated is not to deny the importance of the activities of creation and application showed by Alavi and Leidner's literature study, but our aim is to study whether it is really possible to transfer tacit knowledge or not and question the utility of IT for a successful transfer of it, in order to understand if technology tools can be a substitute for face to face contacts and relations between people. Specifically for our aim, we decided therefore to focus both on the area where ITs are most applicable (storage of information) and on the issue where ITs are difficult to use (transfer of individual capabilities). We therefore want to show the difference of understanding of the use of IT tools concerning both explicit knowledge (more related to storage of documents and data) and tacit knowledge (more related to the transfer of know-how between individuals according to different methodologies).

The storage of data in companies plays a determinant role: it is also called organization memory and it includes knowledge in different forms as written documents and electronic databases (Tan et al., 1999). The topic has a wide space in the literature and it is linked to the concept of learning. Since learning cannot occur without memory, organizational memory is seen as a prerequisite for an effective learning (Lehner and Maier, 2000). We believe that a reliance on this kind of knowledge shows the explicit nuance of the knowledge, since its aim is to formalize/codify and store knowledge in different fashions. Tan also defines organizational memory as "*documented organizational procedures and processes and tacit knowledge acquired by individuals and networks of individuals*" (Tan et al., 1999), but the latter aspect entails difficulties in its storage and seems to be related to the individual memory of the people. Information Technology tools play a

determinant role in enhancing organizational memory: computer storage techniques, multimedia databases and corporate intranets are the most common ones (Alavi and Leidner, 2001).

A controversial aspect of organization memory is its potential bad influence on organizational performance. According to Denison, it can bring to an organizational culture which is resistant to change (Denison and Mishra, 1995). We do not agree with the latter perspective because we believe that every company needs some fundaments to rely on: they can improve the organization performance forming a huge database of data and best practices and the negative aspects do not have such a big relevance; however it will be interesting to see how companies interpret this issue.

2.5 HOW TO TRANSFER KNOWLEDGE

The matter of transferability of knowledge has several aspects and can be seen from different perspectives. Firstly, we have to distinguish between conversion and transfer, both related to tacit and explicit knowledge. In the heading related to the different kinds of knowledge, we underlined that it has been widely discussed whether a conversion from tacit to explicit knowledge could be done or not. We mentioned how, according to Nonaka (1994) a conversion from tacit to explicit knowledge could be possible. In contrast Tsoukas believes that this conversion is not possible for the tacitness of this kind of knowledge, and he suggests instead a transfer of this kind of knowledge with the so-called "attention-drawing" process that allows for a proper proliferation (Tsoukas, 2003), but we will come back to this point later in this paragraph.

Concerning the transfer of knowledge, if we talk about explicit knowledge, the process, with the help of IT tools, does not involve particular problems, as we already stressed. With the process of "codification" the knowledge is structured and stored in systems which allow an efficient transferability via data networks (Hansen et al., 1999).

When our attention shifts to the transfer of tacit knowledge, on the other hand, things get more complicated. A process which is largely shared is the one of "personalization", with whom tacit knowledge is transferred between individuals through personal contacts (Hansen et al., 1999). Alvesson (2004), interpreting Hansen's findings, states that while the codification is fostered by an "economics of reuse", where people are focused and goal-oriented, the personalization relies on the skills of qualified people, with huge curiosity and creativity (Alvesson, 2004, p. 185). We can understand how the perspectives differ: a focus on goals and processes whose aims are replications and standardization is compared to a more dialogical and creative approach: the latter is the one where tacit knowledge and individual skills reside the most and it is the one that we are deepening in our research.

In this heading we will concentrate both on indicators which are relevant in the tacit knowledge transfer (as relationships, trust, intuition, language…) and on concrete methodologies for that transfer (active learning, IT tools, attention-drawing process, teams…). It has not been an easy procedure to distinguish within the literature the difference between indicators and

methodologies, but we believe that elements which can characterize, facilitate or obstruct a knowledge transfer have to be separated from real methodologies about such a transfer.

A preliminary remark has to be done in order to analyze the knowledge transfer in an appropriate way. We have to acknowledge the difficulty of interpretation that tacit knowledge entails, but we try to go beyond an approach that relegates it to being forever personal (D'Eredita and Barreto, 2006). We question therefore the reliability of Polanyi's phrase "*We know more than we can tell*" (Polanyi, 1966 p. 4). Analyzing the literature, we have been fascinated by thoughts which conceive tacit knowledge as something that is stucked in individual's minds, but we had to deepen less "philosophical" insights which involve an effective transfer of this kind of knowledge with some methodologies: a too skeptic attitude would only obstruct organizations' innovation.

2.6 INDICATORS FOR THE TRANSFER OF TACIT KNOWLEDGE

Relationship between people
The first strategic indicator for a transfer of tacit knowledge cannot be reduced to one single word and it deals with the matters of social relations, as being a result of a constructive and collaborative process (D'Eredita and Barreto, 2006). Dhanaraj, studying the relationship between foreign parents and international joint ventures, stresses how relational embeddedness (a combination of ties, trust and shared values) plays a key role in tacit knowledge transfer, assisting in an efficient socialization, the latter interpreted as a process of active involvement between the "teacher" and the "student". (Dhanaraj et al., 2004). Moreover, since there are some aspects of tacit knowledge that can be only learnt through processes of "*show-how*", what is relevant is also the proximity between the transmitter and the receiver (Roberts, 2000). We can understand how the feasibility of a transfer is strictly dependant on the relationships between individuals and it can be understood as an elemental indicator.

Trust
Another important indicator is the mutual trust: a high level of trust between people means a low level of risks and uncertainties during the tacit knowledge transfer (Davenport and Prusak, 2003). Moreover, it has been found out studying alliance partners that the transfer of this kind of knowledge is strongly related to higher perceptions of trustworthiness (Becerra et al., 2008). Notwithstanding, this indicator is not something which can have an objective truth and independence. We conceive trust as an element linked to broader concepts, and for this reason we share Roberts' ideas: he points out that trust is developed with an appreciation of a shared cultural and social context (Roberts, 2000). Thus, knowledge transfers can be relatively easier if the exchange is done between actors who share the same values and beliefs: we can therefore understand the relevance of the culture for this process.

Intuition, Hierarchy and Power

An interesting element found in the literature is the role of intuition and feelings concerning the knowledge transfer. If we slightly shift the focus to the SMD (Strategic Decision Making), we can understand the relevance of the intuition and how it can be related to a knowledge transfer. Sometimes managers, when they have to make business decisions and –we add- transfer knowledge, can decide for some strategies even though they may not seem rational: "*…a decision considered nonrational because it lacked information might simply have been an application of tacit knowledge filling the gaps"* (Brockmann and Anthony, 2002). We notice how the role of personal intuition can have a big relevance in organizations and this personal attitude is nothing else than something embedded in people's mind, a personal know-how which does not necessarily rely on information and data but belongs to an individual and is the result of past experiences, ready to be used in strategic decisions. However, this last point entails another, somehow bigger problem. How can managers be trusted by their colleagues according to specific intuitions? In other words, how can a single tacit idea have support within the organization if it is not based on clear data and it may apparently be interpreted as illogical and precipitate? We did not find in the literature a correlation between strategic decisions based on tacit knowledge and the role of power about this argument, but our data gathered from the interviews will provide us some important insights concerning that.

The other relevant indicators that have to be considered are power and hierarchy: we question if they can be a barrier for the transfer of tacit knowledge. Hierarchical structures can hinder the sharing of information and therefore the transfer of tacit knowledge (Disterer, 2003) and sometimes the sharing and transfer of some particular information can cause a loss of personal influence since knowledge is conceived as power (Disterer, 2001). We can notice how the particular skills and know-how are strategic elements for organizations' success and how power and hierarchy are important indicators for its transferability.

Other indicators have been found in the literature, such as language and communication which can allow a spread of knowledge (von Krogh 1998) and we are relating them to the previous indicators (language, for example, as a part of culture, mentioned together with trust).

2.7 METHODOLOGIES FOR THE TRANSFER OF TACIT KNOWLEDGE

We are now concentrating on the most problematic issue, since we are studying how to transfer a part of knowledge that is already confusing and slippery by itself. Nevertheless, we should keep in mind the indicators previously listed as elements which can facilitate or hamper the knowledge transfer within different methodologies. An interesting scenario will be provided after the interviews taken in different companies, to see how organizations interpret and trust the different methodologies, or better, whether they formalize some of them or the tacit knowledge transfer is something embedded in their processes and considered as "natural".

Experience/Implicit Learning/Active Learning

Martz and Shepherd tried to measure implicit learning with active learning experiences and their data (both quantitative and qualitative) showed that experience can provide implicit learning and therefore increase the individuals' tacit knowledge (Martz and Shepherd, 2003). This means that there is a possibility to control tacit knowledge through structured processes and activities, and the implications for the business could be relevant in order not to lose knowledge. In other words, this could mean that using the specific methodology of the implicit learning (provided by a particular experience) people can increase their skills and be a vehicle themselves for a successful transfer of tacit knowledge. Martz and Sheperd's work is not the only one, in the broad body of literature, which introduces the experience as a way of acquiring tacit knowledge.

Tsoukas (1996) states that tacit knowledge is gained only through an "endless" number of experiences, meaning that it is not convertible to explicit knowledge (as we stated above). The aim of this methodology, therefore, is not to look for a way of converting tacit knowledge but to find a convincing manner to make it proliferate. The next methodology will go beyond the experience and the implicit learning, introducing a more collaborative process between individuals.

Attention-Drawing Process

This particular process can provide us a perspective which is linked to the experience-based learning but at the same time goes beyond it, calling for a more social interpretation. In order to do so, we cannot simply rely on a conversion of knowledge as it has been showed but, instead, we have to *"start recursively drawing our attention to how we draw each other's attention to things"* because tacit knowledge can only be showed in what we do (Tsoukas, 2003) and a possible transfer of this kind of knowledge occurs when our skills are showed through social interactions (Tsoukas, 2003). D'Eredita and Barreto, studying Nonaka and Tsoukas, question their ideas, showing that an individual's tacit knowledge cannot be made explicit and it can only be reflected upon leading the attention of other people: this attention-drawing process is critical because both the "teacher" and the "student" experience the world episodically (D'Eredita and Barreto, 2006).

D'Eredita and Barreto go on stating that past episodes help to build new episodes, and they are created resulting from different interpretations of the stimuli: as in a car driving lesson, both the student and the teacher are creating new episodes but while the student driver is concentrated on constructing unique actions, the teacher thinks about leveraging past experiences, thus allowing a transfer of tacit knowledge.

We can understand how this process is built on the necessary tool of the experiences which form people's thoughts, but this is not enough. People, in order to share and transfer tacit knowledge, need social interactions: the individuals are linked together in the way they experience their lives. The core of this process is therefore a construction of episodes which occurs in a social context: this can determine a transfer of tacit knowledge between individuals, according to this perspective.

Mental Imagery and Storytelling

These two methodologies belong to a creative perspective of business, where managers use personal images and stories to make sense of the reality and, we think, they can be useful tools to transfer the tacitness embedded in some kind of knowledge.

Mental imagery is the process of *"visualizing pictures, events, and scenarios in the "mind's eye"*: it is a particular instrument to call back the personal tacit knowledge to plan future events (Brockman and Anthony, 2002). Images have been also interpreted as substitutes of reliable indicators of knowledge of the individuals (Alvesson, 2004, p. 81), but we go beyond this interpretation stating that, according to their power to call back personal know-how, they could have the power of transfer the tacit knowledge, absorbing both experiences and individual learning.

Another interesting methodology to transfer tacit knowledge is the storytelling, an old way of transferring information and ideas through narratives (Sole, 2002) that, however, involves some problems: if the interaction is not structured, if people are not professional storytellers or if they are too specialized storytellers because of their high level of language, there could occur some relevant losses of knowledge (Kamil and Mahmud, 2008). We can notice how the issue of language and communication strictly influences the transfer of tacit knowledge through the storytelling and how these methodologies depend on these indicators.

Information Technology (IT) Tools

This methodology for the transfer of knowledge (in particular for tacit knowledge) has been widely discussed in the literature. Undoubtedly IT facilitates the knowledge transfer *"by extending the individual's reach beyond the formal communication lines"*: contacts between the individual who has the knowledge and the one who needs it are therefore easier and faster (Alavi and Leidner, 2001). However, as Roberts points out, ICTs can help a transfer of knowledge which can be codified (explicit knowledge) but the transfer of tacit knowledge cannot be done in such a simple way (Roberts, 2000). Our basic question is therefore whether IT tools can be an efficient way of transferring tacit knowledge or other elements are needed. Roberts, in the same seminal research that we cited above, concludes that, because of elements of tacitness that are embedded in some kinds of knowledge, ICTs fail to be proper tools for a successful transfer and the latter could be only done with a "show-how" process of demonstration which involves face to face contacts and co-presence (Roberts, 2000). Moreover, it has been studied how, since tacit knowledge is a core capability developed through learning by doing and interaction processes, emphasizing on IT tools (which would mean an effort of converting tacit knowledge to explicit knowledge) can hinder the development (Johannessen et al., 2001) We can notice how IT tools are interpreted as an erroneous way of transferring that knowledge because of their inappropriateness. The problems shifts therefore to the concepts of relationships between people and face-to-face contacts, parts of the attention-drawing methodology that we studied above. Another interesting point is the theory according to which IT tools could likely be a substitute of face-to-face contacts if their use would begin in the nursery school (Roberts, 2000). That would mean that an appropriate use of IT

tools as methodology for a transfer of tacit knowledge is dependent on the level of "understanding" of them, and that a late start of using them will always cause huge bias. Moreover, other different perspectives should be studied. According to Bolisani and Scarso (1999), tacit knowledge can be transferred into information and data and then transferred with electronic tools but it strictly depends on the social contexts that firms and people share. We have to underline that this perspective strongly rely on Nonaka's interpretation of a possible conversion between different kinds of knowledge. We can therefore understand how a transfer of tacit knowledge has been interpreted as possible if it goes through a process ok knowledge conversion: tacit knowledge can be shared with a previous conversion into explicit knowledge and new tacit knowledge emerges from the absorption of codified knowledge. This process, however, is possible if a common social and cultural context allows that. Nevertheless, according to Roberts (2000), if the conditions that we stated above are fulfilled "*(people) may share tacit knowledge by assimilating codified language and thereby creating new tacit knowledge that will be largely, though not completely, the same".* Deepening the future implications of IT tools, Dennis, Flavin and Davies (1998) claims that new developments of these instruments can occur, enabling co-presence without co-location, building virtual spaces which can replace face-to-face contacts, thus increasing the success of a proper transfer of tacit knowledge. We support Robert's perspective (2000) which acknowledge the existence of new developments, as suggested above, but shows how these measures have a long way to go both for high costs and for a real difficulty in creating a virtual environment which can replace the basic face-to-face-contact.

It will be interesting to understand, with the data gathered through the interviews, what companies think about a feasibility of a transfer of tacit knowledge with IT tools and to which extent they can be a substitute of relationships between people.

Teams

Another convincing methodology involves the process of the teams. Organizing people into teams is a way which can facilitate the process of making the tacit knowledge at the individual level more explicit at the organizational level (even though there is a risk that this knowledge could remain confined in the team): this is considered as an efficient process, while a digitalization by IT tools would limit the tacit knowledge transfer (Johannessen et al., 2001). We have to stress that this approach is not looking for a total conversion of tacit knowledge to explicit (as suggested by Nonaka and previously examined), but instead it tries to recognize the ambivalence of the knowledge. Companies should therefore focus on the "total knowledge base", made by both tacit and explicit knowledge, and this is possible with an organization in teams based on apprenticeship, trust and relations between people (Johannessen et al., 2001).

E-Learning

The instruments of e-learning and e-collaboration are interpreted as a possible tool for the transfer and sharing of tacit knowledge. E-learning is something which goes beyond the simple IT tools, it is more related to engagement, enhancement and empowerment and it involves the

creation of web-based communities of practice where, through the creation of networks to share experiences, tacit knowledge can emerge and be transferred (Harris, 2009). We can understand that this is a rather new perspective and it can rapidly spread in the future. It is a new application of IT tools and we have to acknowledge that the construction of networks can play a key role. Moreover, professional networks such as LinkedIn can facilitate this transfer and build relationships between people (Harris, 2009). The literature concerning this matter is quite limited since the topic is rather recent, but we can forecast an increasing use of this methodology in the next years, with a possible power of being an efficient way to transfer tacit knowledge. Sharing is becoming a key word: what simple IT tools cannot do is upgraded by an improvement of them, with the aim of building networks between people.

2.8 FINAL REMARKS ABOUT THE LITERATURE

Our analysis of the literature provided us crucial ideas about how scholars in the past years interpreted the different areas we are interested in.

We understood how the concept of knowledge is ambiguous and sometimes misleading and how in the recent years this issue has been interpreted in a more social way, as a process which is built through contacts between people.

We analyzed different kinds of knowledge, focusing particularly on the difference between tacit and explicit knowledge. While the former has been interpreted as the know-how of the people based on experience and learning and which cannot be easily formalized, the latter is knowledge which can be codified and structured through documents and basic information.

A strong debate has been done in the past concerning a possibility of a conversion of tacit knowledge to explicit knowledge. We analyzed approaches which conceived tacit knowledge as forever personal, thus not convertible and other perspectives that, in contrast, believed in a conversion through processes of codification.

If we assume that we cannot convert that kind of knowledge for its slippery nature, we should shift our analysis on a transfer of the tacit knowledge. Several methodologies have been treated, most of them entailing a process of socialization/personalization, where personal capabilities are shared between individuals. We therefore questioned the effectiveness of instruments like Information and Communication Technology Tools as a substitute of face-to-face contacts during a transfer of tacit knowledge and we understood how scholars are skeptic about a complete replacement of them. On the other hand, an enhancement of IT tools with the "added value" both of e-learning and of the creation of "virtual spaces" could bring to better results.

We stressed how, for a proper transfer of tacit knowledge, some strategic indicators can influence the success or failure of the procedure and we pointed out that the most relevant ones are relation between people, trust, sharing of common language and culture and intuition, the latter strictly linked to hierarchy and power.

Another aspect that we analyzed is whether knowledge can be properly managed or not by organizations, and we found out ambiguous approaches again. We agreed that to manage knowledge is a rather problematic issue and that we have to go beyond old-fashioned approaches which rely on top-down and hierarchical views, embracing a more dialogical conception of the management, with the power of giving importance to culture and relationships between people.

We noticed how the general trend of the literature involves a quite positive idea concerning the transferability of that kind of knowledge. Nevertheless, relevant doubts are showed, and with our qualitative data we will try to understand what is the level of trust in the business environment regarding a complete and successful transfer of this tricky element. Especially, coming back to a problem that we mentioned above, we do not think that a conversion of tacit knowledge to explicit knowledge nor a process of show-how are wrong: on the other hand we are looking for empirical data which can combine the two approaches. When a firm tries to transfer tacit knowledge, a simple process of attention-drawing would, in our opinion, cause huge losses since the company would not "store" the specific skill. On the other hand, a simple conversion/codification of knowledge would exclude the social component of sharing the know-how. Instead, we want to look for the method with whom companies conceive a combination of the two approaches, if such a method exists.

3) EMPIRICAL DATA

3.1) THE COMPANIES

We decided to take interviews in five different companies. Four of the firms are located in Sweden, exactly in the region of Skåne (South-West of the country) and they belong to the so-called "Medicon Valley", a part of Sweden characterized by a strong scientific research, especially in the medical and biotechnological sector. The sectors of the companies are: pharmaceutical, medical and nutrition/biotechnology. Three of them are small companies and one is a big international firm. Another big international company which we collaborated with is located in Belgium and its field is chemical. This last organization is the only one which has a proper department dedicated to Knowledge Management, and this element provided us crucial insights. We decided to focus on these kind of companies because, following Alvesson's (2004) perspective, these firms' sectors can be seen as knowledge-intensive, where the focus on individual skills and scientific procedures is crucial for the innovation. Since we are studying the knowledge issue and particularly the tacit knowledge, we believed that they can provide us the insights that we were looking for. Since all the five companies give a strong importance to research and individual know-how, we believe that the tacit knowledge embedded in the managers and employees plays a determinant role for the overall viability.

Moreover, we decided to compare different size of companies: we therefore took our interviews in two big multinationals (average of 18.000 employees) and in three small enterprises (average of

22 employees). We thought that it was interesting to understand what are the different approaches to knowledge regarding companies of different size operating in similar sectors, to show whether they deal with the knowledge centrally or their focus is embedded in every business area.

3.2) THE INTERVIEWS

A total number of eleven interviews has been taken. The tool that we used (in the small companies) has been the one of in-depth semi-structured interviews: questions have been previously prepared but have not been strictly followed. In other words, since our aim was to understand the people approach to our issue, we had to follow a determined path (our questions) but even more important has been to let the interviewees freely express their thoughts, leaving them some freedom in their answers. Regarding the two international organization, we used the simple tool of the phone call because of higher difficulties in organizing face-to-face interviews.

The positions of the interviewees were different and covered different areas: CEO, Product Manager, CFO, Head of KM Department, Research Manager, HR responsible, Corporate Knowledge Specialist… This has been done in order to catch all the possible nuances of the matter from various perspectives.

The companies have been contacted by email and they agreed to take part in the interviews in different ways (face-to-face contacts and phone calls).

A list of basic questions (see the Appendix) has been sent before the interviews both to the small firms and to the two multinationals, in order to introduce the people to our matters and be sure that they really understood what we were looking for. The interviews done in the three small companies have been recorded with digital tools and then transcribed, while the data gathered during the interviews via phone calls have been transcribed live, asking to the interviewees to slowly express their thoughts.

We therefore gained qualitative data which have been carefully interpreted and compared to the literature to test whether our insights were right.

Main areas covered by the interviews

Reviewing the literature, we decided to deepen some particular issues that we believed being relevant. They are sort of hypothesis that we will "test" with the interviews. Since we are using a combination of a deductive approach and an exploratory perspective, we did not formulate "concrete" hypothesis but, on the other hand, we elaborated some important insights that we are studying with the collaboration of the firms. Thus, the basic arguments that we treated during the interviews have been:

A) How does the company store explicit knowledge

A simple reason stands behind that choice: to show the company's approach to knowledge. We believed that, since knowledge is becoming an asset, it is meaningful the way in which a company understands the problem and acts in order to manage it. Our interest was more related to an interpretation and transfer of tacit knowledge, but we thought that an understanding of the "basic" knowledge which is the explicit, the one which is transferable in an easier way, was an important starting point in order to have a broad and complete vision.

B) Tacit Knowledge: what is the personal interpretation and how companies transfer it

We wanted to compare companies which have a specified and formalized approach to transfer tacit knowledge to companies which do not have such methodologies. Basically we wanted both to have personal interpretations and opinions about the matter of tacit knowledge and to understand whether the company focuses on concrete methodologies to transfer it and to avoid losses or they are not formalized.

C) Role of Information and Communication Technology Tools (ICTs)

It has been argued in the literature the feasibility of a complete transfer of tacit knowledge through the sole instrument of IT tools. We aimed to understand whether IT tools can substitute face-to-face contacts in a full way or people still need relationships and proximity in order to transfer tacit knowledge in an appropriate way.

D) Intuition, Hierarchy and Power

We were interested in the role of intuition and personal ideas during the strategic decision making. We think that this aspect hides a high tacit knowledge: the personal know-how based on experience often leads the actions of individuals when they are not "officially" supported by data and information. We wanted to understand to what extent individual intuitions could be followed in the business environment: it is only a matter of hierarchy and power which makes us trustable by the others?

3.3) FINDINGS

A) Explicit Knowledge Storage

In small companies, we noticed a big reliance on simple papers as a tool where to store explicit knowledge, in addition to a saving of files in shared drivers.

"We are a printing factory, and our old-fashioned printing and storing procedure is probably the most common way to capture and store explicit knowledge for us. We create PDF files, we print them, sign and store both in paper and in shared drivers where everybody can have access" (CFO, 8 years service)

"We basically use the very old-fashioned logbooks; everybody has his own book where he writes his experiments and his results and in the end of the day the responsible of every project collects all the knowledge produced…We exploited the possibility to have electronic books but right now it's not worth it: we can keep a hand on almost everything and we are not that afraid of big losses. Of course it would be better with more modern tools but at this level we cannot afford them" (Senior Researcher, 4 years service)

Only one of the three small companies has an intranet where everybody basically have the same access expect some restricted areas for confidential information; two firms use ERP systems even though they are rather little and basically only for invoicing. Only one firm uses just shared drivers and paper tools, while the other two rely on either internal sites or ERP systems. An important point is the Quality System of the companies which works in the medical industry: it is interpreted as a "control" of their activities.

"Since we are regulated by the Quality System for the Medical Industry, we have to document all what we do in a very precise way" (Research Director, 7 years service)

The tools of Wikis, Blogs and Forums are seen with distrust by all the three small companies, both for their cost of money and time and for internal policies.

"Wikis, Forums, and tools as Facebook are definitely not applicable on what we are working on. We don't want to spread too much the information outside the company: we don't want to lose control of our information" (Research Director, 7 years service).

An interesting and apparently controversial point mentioned in the literature was whether a big reliance on data and information could cause resistant to change environment, as suggested by Denison and Mishra (1995). We could not find any relevant support to this perspective, conversely the firms we collaborated with highly trusted an emphasis on data.

"The knowledge intensive firms and especially the medical devices always have to relate to basic data. Our products are good also for the data that we have collected before that make your life easier" (COO, 5 years service)

"IT systems, ERP, Share Point and so on can become an obstacle for your efforts to maintain them, but in the pharmaceutical and medical device we have to do it and if it hampers it's because you don't use them in the correct way or you don't understand them" (CEO, 3 years service)

Concerning the two international companies, they use different kind of systems: ERP and SAP tools, intranets (internal sites) and shared drivers. Moreover, one company uses Microsoft Share Point (MOSS) for the documentary management and for its functions of wikis, blogs and forum and this company has a central department of Knowledge Management which with gives support

to every business areas regarding the knowledge. The other company which does not have a department dedicated to KM does not use the tools of forums and blogs but has an internal wiki.

"We have a central Knowledge Management department which deals with every business area and then we have different local KM departments. We store data with SAP (ERP), shared drivers and MOSS with its several functions. Besides, there are specific systems for particular needs. Regarding Share Point there are restricted areas whose access is given by the administrators, then every business area has its own team site with 10/20 different levels of access: it's a very elaborated system" (Knowledge Management Process Specialist, 10 years service)

B) <u>Tacit Knowledge: what is the personal interpretation and how companies transfer it</u>

The first relevant finding is a generally skeptic attitude regarding a 100% transfer of tacit knowledge and know-how of people in the small companies. The interviewees understand that tacit knowledge is a key indicator for the success of the company, but at the same time they cast doubts about a complete and successful transfer.

"The thing is that: how can you transfer it? I can find the documentation surrounding the subject but I can't find the sentiment… This has to do with attitude and what people believe and their values…you can't transfer it. You will just have to accept it, face the loss and go on with it because everybody is replaceable" (CEO, 3 years service)

"The know-how is in the limit of the things that you can touch and you cannot touch: if I see a person doing an experiment, I can notice just from what is on the table what is wrong, and that comes because I did these experiments so many times and I experienced all the mistakes: so I can recognize what is wrong at the first glance. I don't know if there is a way to transfer that and how much it could be worth it to look for that way" (Senior Researcher, 4 years service)

We found a quite different attitude in the company which has a department of Knowledge Management, where the approach to knowledge is more "specified". Basically they believe in a transfer of tacit knowledge through a previous conversion to explicit knowledge. We can see how the conversion, with appropriate methodologies, can be possible and can influence the transfer.

"Transferring all the tacit knowledge of the people would mean an exaggerated and sometimes useless work: you wouldn't be sure to capitalize proper results. We do a big effort to identify the tacit knowledge and it is not easy to find it; then, we do not transfer all the tacit knowledge but only the critical one" (Knowledge Management Process Specialist, 10 years service)

"Very large part of tacit knowledge can become explicit through a process of conversion but this process takes time and money and it is important to locate what is really necessary to transfer: we do a kind of prioritization. However, most of the people (especially the old ones) believe that is quite impossible to transfer tacit knowledge… until you provide them evidence that it's possible!

For me to transfer tacit knowledge means transferring a mental model in order to create a more structured model" (Head of KM Department, 22 years service)

A meaningful point is the matter of the methodologies to transfer the individual capabilities of individuals. We found out that all the companies understand how important it is the effort of reducing the losses of know-how but most of them do not focus on concrete methodologies to transfer this kind of knowledge. Often tacit knowledge transfers are implicit mechanisms within the groups and the projects: we can say that they are embedded processes which occur "silently". Most of times a simple work side-by-side is interpreted as the most successful way to transfer knowledge, while a focus on different kind of methodologies is not conceived as something urgent in the company environment.

"We don't have administrative tools or policies to transfer tacit knowledge. The knowledge often is within our projects group and we implicitly have this personal transfer throughout working together (CEO, 3 years service)

"Some years ago it happened that a person went on retirement and before leaving he worked side-by-side for some weeks with the new person that we hired, and it was quite successful" (CFO, 8 years service)

"We have to understand how to train a person in the best thing because different people have different methods to learn things. It's difficult to have standardized methodologies. Mentorship can be a successful tool by the way" (COO, 5 years service)

Most of times the transfer of tacit knowledge implicitly occurs through the company's documents, as a result of a previous conversion of knowledge. It is relevant to understand how a conversion of knowledge that we deepened in the literature is interpreted as possible by companies. This big rely on documentations and project papers is also strictly linked to the quality systems according to which most of knowledge-intensive firms work: this system prevents big losses of knowledge and facilitates an appropriate transfer of tacit knowledge. Nevertheless this conversion to explicit knowledge is not fertile if it is relegated to documents: on the other hand it needs contacts between people in teams or side-by-side cooperation.

"We work together with our quality system and this is the basis. We write reports, then we control them and we have research meetings to analyze them together and improve what we can… If you are a new employee you work with your supervisor but the importance is that the report that you have to write could be read by more persons so it's not just in one person's head" (Research Director, 7 years service).

"We don't have specific methodologies to transfer tacit knowledge; we document everything and everybody can have access to the information if they are legitimate (there are different level of security). Besides, we have workshops, conferences, introductory programs and for us that's a sort

of transfer of knowledge: you need both formal info as data and informal ones as contacts between people. (Human Resources Consultant, 5 years service)

Regarding the company which has a department of Knowledge Management, we noticed a different approach. Different methodologies for different kind of transfer of tacit knowledge are specified and a "knowledge circle" has been studied, in order to understand how to act.

"We use different methodologies according to different needs: they go from mentoring to community of practice, from baton passing to critical expertise map… We basically follow the Knowledge Lifecycle: identify, collect and capture, codify and structure, organize and store, share and spread, create, use and exploit… and then it restarts with identify and so on…" (Knowledge Management Process Specialist, 10 years service)
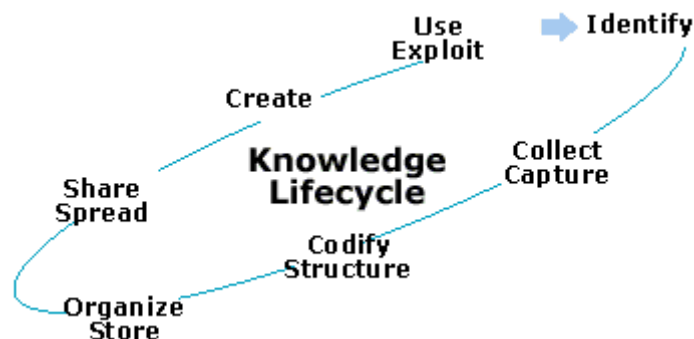
Source: Internal Company Documentation

"Our most successful methodology is called baton passing. Some years ago I facilitated a transfer of tacit knowledge according to this methodology between two opposite people: a 64 years old engineer with an extraordinary experience and a 39 years old lawyer. At the very beginning there was a huge wall between them, the old manager even told me "I will only speak to you but not to the other guy". But step by step we managed to sit we three in the same room for almost 5 hours and we succeeded to transfer a big part of knowledge through me as a facilitator" (Head of KM Department, 22 years service)

C) <u>Role of Information and Communication Technology Tools (ICTs)</u>

In the literature it has widely been questioned whether Information Technology tools as electronic mail, voice mail or videoconferencing can be an efficient transfer for tacit knowledge or people need face-to-face contacts and co-presence.
All the companies we collaborated with agree that IT tools can be an efficient way inasmuch as they are considered as "tools": they can help for a transfer of tacit knowledge but they can't be a substitute. Indeed, the transfer that people could have with a sole use of them would entail some losses of strategic knowledge. Tacit knowledge, because of its slippery nature, can't be transferred

with an exclusive use of technology and individuals need contacts where to establish a sort of what we call "empathy".

Moreover, we found a skeptic attitude concerning, in the future, a possibility of replacement of face-to-face contacts in the case IT tools will highly evolve. Some doubts have been showed as well relating to the issue of an inappropriate way of using IT tools. Studying the literature we examined a perspective which believed that if the use of IT tools starts in the nursery school, people could more likely conceive them as a substitute for face-to-face contacts. We did not find any relevant support during our interviews: the tacitness embedded in that kind of knowledge cannot be over compensated by a 100% use of electronic communications.

"IT tools can help but my experience taught me that the only efficient way is people working together, with oral communication and the importance of continuously asking why, why and why". (Research Director, 7 years service)

"IT only helps if we have identified, with KM methodologies, which kind of tacit knowledge should be transformed in explicit knowledge (Knowledge Management Process Specialist, 10 years service).

"At an introductory level IT instruments are important because they can locate you in the map but at a second level their full use is very complicated…maybe in the future this can be more sophisticated" (Senior Researcher, 4 years service)

   D) Intuition, Hierarchy and Power

We are also interested in a field which has not been studied as broadly as the other arguments of knowledge storage or knowledge definitions. The elements of intuition and personal feelings play a role in the strategic decision making, as we pointed out following Brockmann and Anthony (2002). We therefore deepened to what extent intuition, as a feeling which hides tacit knowledge, is interpreted in knowledge-intensive firms: how they deal with it and how people can be trusted by the others in the business environment if they have apparently "non-rational" ideas which do not strictly rely on data or explicit past experiences.

We found out that a large number of decisions is done according to intuition and the interviewees stated how this feeling is strictly related to the tacit knowledge of an individual. Especially in knowledge-intensive firms, where the core is based on intellectual abilities, a large numbers of decisions comes "from the gut" and the environment fosters personal interpretation and use of judgment. Notwithstanding, we found out that intuitions and personal insights are highly linked to power, leadership and prestige. A high position in the company makes you trustable and your tacit knowledge is more reliable than others' in lower positions. Knowledge, therefore, is very related to power and this aspect can jeopardize the innovation and the company's viability. We found out how our interviewees recognize this matter but, at the same time, picture an environment where tacit knowledge should be shared and easily transferred across the organization.

Regarding the intuition as vehicle of tacit knowledge, we found out how many decisions are taken basing on that.

"Since we are a research company, if you have some crazy idea you usually can go to the laboratory and try it out if it's not too expensive, we allow this kind of freedom" (CFO, 8 years service)

"At the end of the day very much of what you decide comes from your gut and not from your brain, based on all your tacit knowledge and your experience…and you come to the conclusion that your insights are not based on data: we are fine with that" (CEO, 3 years service)

"Intuition and ideas coming from tacit knowledge are very important in knowledge-intensive firms and especially in our type of business (medical device): *every day we have a huge numbers of ideas which are not documented and we have to carefully deal with them" (Human Resources Consultant, 5 years service)*

At the same time, as we can see from the next fragments of interviews, knowledge is linked to power and hierarchy. Having recognized that, it is common opinion that companies cannot rely too much on individual's know-how of people who take advantage of that and do not want to share and transfer tacit knowledge, because it would obstruct progress and innovation.
In other words, they basically understand the relevant role of knowledge as power but they act in different ways, trying to create a collaborative environment where knowledge has to be shared.

"Undoubtedly knowledge is power, but people are supposed to be easily replaced and we rely on special competences very seldom: human race is innovative but being irreplaceable is always a danger since you can't be dependent on one single person" (Human Resources Specialist on University Relations and Recruitment, 3 years service)

"Knowledge is linked to power… In my previous company there was this guy who was the big brain but in the end of the day we had to fire him because he didn't want to share and transfer his tacit knowledge: you can't have that kind of individual in a company" (CEO, 3 years service)

"We believe in personal intuition but if the owner of the company arrives and states his opinion based on his experience and his tacit knowledge, saying 'let's not go that way, let's go this way instead'…we have to follow him and he is normally right" (CEO, 3 years service)

"Keeping knowledge is power but…not that power. Since you have to be updated day after day, what you keep can lose its relevance very very quickly" (Research Director, 7 years service)

"Knowledge is sharing! If I don't transfer it, I'm doing nothing. If you don't transfer all the tacit knowledge that you can, you haven't produced anything because it dies with you. My measurement of success is to give knowledge to others" (Senior Researcher, 4 years service)

"Unfortunately plenty of people still think that knowledge is power but the world is becoming too complex to rely on a single individual's decision: organizations have to evolve to another model where the only useful knowledge is the one that is shared. If I could use a motto, I would use Obama's "Yes we can": it's not I/Me but We!" (Head of KM Department, 22 years service)

A last important mention of our findings has to be done concerning a matter which is not related to our four headings but which we found crucial within the tacit knowledge transfer. During our interviews we found a big support to the literature regarding two indicators which play a determinant role for that transfer: trust and communication.

"Trust is very important during the tacit knowledge transfer, and it comes from the past experience of the person" (Research Director, 7 years service)

"For us trust is relevant, both in the transfer of knowledge and in our business in general… (Then, joking): *that's why we don't work with Danish companies? (CEO, 3 years service)*

"The company can do a lot more for a proper transfer of tacit knowledge: people could work together more, and we could create bigger spaces where they can better communicate. The focus should be on communication and language. Our official language is English and often we deal with people who barely speak it. This is a big barrier: if you don't have a good English, the doors are closed for you" (Human Resources Consultant, 5 years service)

3.4) <u>DISCUSSION</u>

The qualitative data that we gathered through our in-depth interviews provided us some meaningful insights. As we stated above, we mostly concentrated on two processes of the knowledge management: the storage/retrieval and the transfer.

Concerning the former, we decided to analyze how companies interpret and deal with explicit knowledge in order to understand their approach to knowledge. We surprisingly found a big reliance on simple papers and shared drivers as tools to store documents. Most of the companies are fine with that since they can control the situation quite easily. Nevertheless, they recognize that bigger efforts should be made in the future and some companies are working on more modern systems like intranets, which can allow the creation of team sites, thus facilitating the storage and retrieval of documents. The biggest factor that determined this has been the monetary expense that did not make that measure beneficial in the past.

Last, we interpreted the creation of networks with the tools of forums, wikis and blogs as a possible bridge between the storage and the transfer of knowledge, also of tacit knowledge. We understood how small companies are skeptic about the use of these instruments because of a fear of an exaggerated spread of the information outside the company.

The point which interested us the most was how companies interpret the transfer of tacit knowledge in general (both within the companies and with external entities).

The first and most relevant finding is that small companies have different approaches to this kind of knowledge. Often both the interpretation of what tacit knowledge is and its methodologies of transfer are not fully formalized. That does not mean that the companies do not understand the relevance of the problem. On the contrary, their approaches are open minded and they are ready to learn, but since they do not expressly deal with knowledge matters, they do not think about the matter in a structured way. It has been interesting to find that even a big international company does not have a department dedicated to knowledge. We can state that both the interpretation of tacit knowledge and its ways of transfer are embedded in every procedure and in each business area. We can conclude that tacit knowledge exchanges are implicit mechanisms within the groups, the teams and the projects: they are transfers which occur "silently".

Moreover, these companies have quite a skeptic idea whether particular methodologies can be useful, in the future, to transfer tacit knowledge in successful ways that could prevent big losses or, at least, the focus on specified methodologies is not a priority for these organizations.

Last, since these knowledge-intensive firms work with Quality System regulations, they have to document everything they do and the transfer of tacit knowledge is somehow seen as an ability of codifying the personal know-how in papers which can be easily accessible to others. In other words, a transfer entails an implicit conversion of skills into documents.

On the other hand, the company with a department of Knowledge Management has a structured approach to explicit knowledge and, in this case, to tacit knowledge and its transfer, according to different methodologies tailored for several needs. Common opinion is that this kind of knowledge can be transferred through a process of conversion of tacit to explicit knowledge. This can be managed concentrating on the critical knowledge and with the help of a facilitator who is able to articulate mental models of people "who know" to more structured models. Indeed, most of the times the individuals who own the skills do not precisely know how to explain in the best way how they can do particular tasks. Here comes the importance of knowledge facilitators who help such transfer by following different methodologies.

Regarding the role of Information/Communication Technology tools, we basically found similar ideas from the people we interviewed. Common opinion is that IT tools can bring to useful results inasmuch as they are used as "tools", defined as elements to be applied by individuals in support of ordinary actions. Technology is seen as, therefore, far behind as a possible substitute for relationships between people. The transfer of tacit knowledge cannot occur with a sole use for it: face-to-face contacts and co-location are always necessary elements.

Strictly linked to these "social" indicators, we understood how important are other indicators as trust and communication. Both are necessary and a lack of them can seriously hamper a proper transfer of tacit knowledge between individuals. We could therefore found support to what Roberts (2000) stated, concerning the need of trust and mutual understanding for ITs to help the transfer of tacit knowledge.

We finally examined how most of the decisions in the companies are taken following intuition and feelings, and these elements hide a high level of tacit knowledge which comes from past experiences and individual learning. Since these skills come from experience of past learned lessons, often this is linked to a high position in the company and therefore most of times the knowledge is related to power and hierarchy. Undoubtedly knowledge is seen as power, and this gives support to the strategic importance that in the last years has been put on this matter, considering it as an asset. Nevertheless, we collaborated with knowledge-intensive firms, following Alvesson's perspective (2004) which interpreted these firms as characterized by a big reliance on individual skills, the need for high communication and a kind of power asymmetry.

We could basically notice all these aspects and we saw the role of intuition and decisions "from the gut" as an explanation for this power asymmetry. As Alvesson (2004, p. 32) states *"Situationally relevant expertise may often carry more authority than formal position, so that knowledge work often makes an organizational hierarchical structure flexible and sidestepped by knowledge-based authority".* We are not saying that power has no relevance, but an environment which tries to follow personal skills as much as it can (with elements of tacitness) and which fosters research and experiments questions the role of hierarchical and top-down methods of management. The result is, however, a contradiction between knowledge seen as power and knowledge seen as sharing, even though at the same time the strengths of the people are focused on a collaborative and communicative approach, where individual capabilities should be encouraged in order to share knowledge.

4) <u>CONCLUSIONS</u>

In our work we analyzed the knowledge issue, its manageability and its transfer, especially concerning tacit knowledge.

Our aim was firstly to critically review the literature and we understood that a big ambiguity resides in it, which questions an objective definition of knowledge and the feasibility of both the way to manage it and the ways to transfer the tacit knowledge (since transferring explicit knowledge is not seen as a relevant problem inasmuch as data, documents and information can easily be transferred via Information Technology tools).

We essentially understood how knowledge is generally interpreted as a socially constructed phenomenon. It should not linger solely on individual's minds but, on the other hand, its power is on the sharing process fostered by a collaborative and dialogic environment.

During our deductive approach we started from general perspectives (the broad literature) to join particular elements (the data gained from interviews) and we combined elements of exploratory studies, since our main goal was to acquire qualitative insights of what people think.

We thought that the most meaningful ideas could come from people whose work highly relies on knowledge and especially tacit knowledge, such as skills and know-how. For this reason, we analyzed firms which can be listed as knowledge-intensive firms, and where capabilities play a determinant role for the innovation.

Moreover, we tried to demonstrate how old-fashioned methods of top-down management could not fit the environment nowadays (and especially of knowledge-intensive firms). In contrast, in our interviews we found support of a more dialogic and shaping way of management, where communication, human contacts and intuition play a key role. Knowledge is more and more interpreted as an asset which should not provide exaggerated power and hierarchy. On the other hand, there should exist a collaborative way of management, using teams and communities of practice, and help with the sharing of knowledge within the company (but not only).

We decided to focus on two particular steps of the so-called "knowledge process": the storage/retrieval of knowledge (particularly explicit) and the transfer of tacit knowledge. Concerning the first one, it was a meaningful indicator to understand how companies deal with knowledge. The more they invest on systems to facilitate the storage and retrieval of data, the more they acknowledge the importance of that. We noticed that big steps have yet to be done, but most of them recognize that in the future they should invest on more modern ways to keep the knowledge in the organization (for example some of the firms are working on newer IT platforms).

Different companies manage knowledge in different ways and the most relevant conclusions comes when a firm has a department dedicated to Knowledge Management. We noticed, in this single firm, a structured approach to this issue and a more optimistic attitude concerning future developments: knowledge can be managed and huge efforts are being made for that. At the same time, focusing on knowledge also means separating what is relevant from what it is not. The process of "prioritization" clearly entails the aim of treating only the knowledge which is worth it to convert, store or transfer.

Concerning companies which do not manage knowledge expressly, we conclude that they understand the argument with an open perspective and their activity is efficient in that way, but we think that this "embedded" care of knowledge has a short future in the case of more complicated procedures or enlargements of the company.

Concerning the matter of transferability of tacit knowledge, we got some relevant insights as well. The theory suggested some interesting methodologies and we understood that there is a big debate about a conversion of tacit knowledge to explicit knowledge during its transfer. Nonaka (1994) talked about the process of codification, while Tsoukas (2003) stressed how the transfer can be done only following a process of attention-drawing or show-how. If the problems shifts to IT tools, we can see how according to Bolisani and Scarso (1999) it is possible to transfer tacit knowledge, and this transfer calls for a previous conversion or codification of tacit knowledge to explicit knowledge; in the end, the knowledge will not be totally the same. The question is: how much of tacit knowledge are organizations ready to lose? Show-how processes with face-to face

contacts and relationships between teachers and students seem to be the most successful methodologies, but we have to recognize that this knowledge has to be converted, in order to become explicit and rely on data and information which can be accessible to everyone.

We therefore state that tacit knowledge can be transferred and this transfer is possible throughout a process of both show-how and conversion to explicit knowledge, with the precious help of technology. Our idea of an interdependency of conversion and transfer of tacit knowledge has therefore been supported by the empirical insights. Processes of conversion of tacit knowledge to explicit knowledge are not relevant without relations, communication and the so-called show-how and vice versa.

We live in a time of networks, where the sharing and transfer of know-how is a fundamental element and companies have to work more with this. They can improve in the storage of data and information, thus allowing the spread of knowledge with modern tools like forums, wikis and blogs which have the power of creating networks of knowledge. Firms which have embedded procedures of transfer of tacit knowledge can properly work in that way for the moment, but in the future they should explicate them in a more formalized way. Methodologies as mentoring, coaching, storytelling or baton passing can fit different needs and their relevance is increasing day by day.

Coming back to our research question, we finally have understood how tacit knowledge can be managed and transferred, especially if the companies have a structured approach to knowledge. Since tacit knowledge comes from the individual's past experience, it has to be treated carefully. With collaborative and social processes it is possible to convert it to explicit knowledge and therefore transfer it through IT tools.

We also found out that technology cannot be a substitute and people will always need relations and face-to-face contacts. Moreover, we understood from a big company that organizations should focus on the critical tacit knowledge, because focusing on the total knowledge would mean an exaggerate level of strength and time: in this way tacit knowledge can be transferred successfully.

In contrast, we noticed how small companies which do not have an approach for the transfer of tacit knowledge, are more skeptical about a proper transfer of it. This is because their procedures worked until now, and big losses have not occurred yet, but in the future they could be more damaging. We think that Polanyi's phrase *"we know more than we can tell"* is very fascinating but it can be somehow questioned by approaches whose aims are an identification of a precise skills and a transfer of it through a process of codification.

How do we therefore interpret tacit knowledge? We are conscious of the importance of know-how of people even though it is often somehow considered as "natural" and "embedded" in the routines (especially in small companies). Such an important element should, instead, have more recognition, with the use of concrete methodologies to share and transfer it both within the company and between individuals. We strongly believe that the innovation has to be fostered by what companies already have in their "hiding places" that are the brains of the people.

Notwithstanding this know-how is, step by step, considered less individual but collective instead, inasmuch as knowledge has no reason to exist without sharing it between people.

The common point and the core of our work is, therefore, that companies have to (and they are acting in a quite right way) share knowledge as much as they can, fostering collaborative environments which strongly believe in communication between groups and whose strength is the transfer of knowledge as a key factor for the future. An individual world is becoming collective, and sharing is the path to follow for the future.

4.1 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Our study has collected data coming from in-depth interviews about people's opinion; in a future research it could be relevant to conduct a longitudinal collection of data, in order to understand how the approach can evolve through the time.

Moreover, a limitation can be our focus on a single company that has a department dedicated to Knowledge Management. For that reason, improvements could be done comparing different companies which manage knowledge centrally.

Finally, an interesting insight could come from a deep analysis of a particular process of the knowledge transfer. Working side-by-side with a firm in the precise moment when it deals with a process of codification or "baton passing", for example, and studying step by step every procedure, could provide meaningful and interesting results.

REFERENCES

Alavi, M., Leidner, D. E. 2001. Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, *MIS Quarterly, V*ol. 25 No. 1, pp. 107-136

Alvesson, M., Kärreman, D., Swan, J. 2002. Departures from Knowledge and/or Management in Knowledge Management, *Management Communication Quarterly* 16: 182

Alvesson, M. 2004. Knowledge Work and Knowledge-Intensive Firms, *Oxford University Press*

Antonelli, C. 1999. The Microdynamics of Technological Change, *London – Routledge*

Becerra, M., Lunnan, R., Huemer, L. 2008. Trustworthiness, Risk, and the Transfer of Tacit and Explicit Knowledge Between Alliance Partners, *Journal of Management Studies,* Vol. 45, No. 4, pp. 691-713 – *Blackwell Publishing Ltd*

Brockmann, E. N., Anthony, W. P. 2002. Tacit Knowledge and Strategic Decision Making, *Group and Organization Management* 27: 436

Bolisani, E., Scarso, E. 1999. Information Technology Management: A Knowledge-Based Perspective, *Technovation 19,* pp. 209-217, *Pergamon*

Bushe, R., Marshak, R. 2009. Revisioning Organization Development: Diagnostic and Dialogic Premises and Patterns of Practice, *Journal of Applied Behavioral Science.* 45: 348

Davenport, T. H., Prusak, L. 1998. Working Knowledge, *Harvard Business School Press*

Davenport, T. H., Prusak, L. 2003. Conhecimento Empresarial : Como as Organisações Gerenciam Seu Capital, *Elsevier*

Denison, D., Mishra, A. 1995. Toward a Theory of Organizational Culture and Effectiveness, *Organizational Science*, Vol. 6 No. 2, pp. 204-223

Dennis, R.M., Flavin, P., Davies, G.J. 1998. Online R&D Management: The Way Forward, *R&D Management 28,* pp. 27-35

D'Eredita, M. A., Barreto, C. 2006. How Does Tacit Knowledge Proliferate? An Episode-Based Perspective, *Organization Studies* 27: 12, pp. 1821-1841 – *SAGE Publications*

Dhanaraj, C., Lyles, M. A., Steensma, H. K., Tihanyi, L. 2004. Managing Tacit and Explicit Knowledge Transfer in IJVs: The Role of Relational Embeddedness and the Impact on Performance, *Journal of International Business Studies,* Vol. 35, No. 5, pp. 428-442 – *Palgrave Macmillan Journals*

Disterer, G. 2003. Fostering Knowledge Sharing: why and how?, in Reis, A. and Isaias, P. (Eds), *Proceedings of the IADIS International Conference e-Society 2003, Lisbon,* pp. 219-226

Hansen, M., Nohria, N., Tierney, T. 1999. What's your strategy for managing knowledge?, *Harvard Business Review,* March-April, pp. 1-10

Harris, R. J. 2009. Improving Tacit Knowledge Transfer within SMEs through E-Collaboration, *Journal of European Industrial Training,* Vol. 33 No. 3, pp. 215-231 – *Emerald Group Publishing*

Johannessen, J-A., Olaisen, J., Olsen, B. 2001. Mismanagement of Tacit Knowledge: the importance of Tacit Knowledge, the danger of Information Technology, and what to do about it, *International Journal of Information Management 21,* pp. 3-20 – *Elsevier Science Ltd.*

Joia, L. A., Lemos, B. 2010. Relevant Factors for Tacit Knowledge Transfers Within Organizations, *Journal of Knowledge Management,* Vol. 14, No. 3, pp. 410-427 – *Emerald Group Publishing Limited*

Khalid, K. S., Mahmud, A. K. 2008. A Proposed Organization Storytelling Conceptual Framework for the purpose of Transferring Tacit Knowledge, *Universiti Teknologi Petronas - IEEE*

Lehner F., Maier R. K. 2000. How Can Organizational Memory Theories Contribute to Organizational Memory Systems?, *Information Systems Frontiers,* Vol. 2, No. 3/4, pp. 277-298 – *Kluwer Academic Publishers*

Martz, B., Shepherd, M. M. 2003. Testing for the Transfer of Tacit Knowledge: Making a Case for Implicit Learning, *Decision Sciences Journal of Innovative Education,* Vol.1, No.1, pp. 41-56

Nonaka, I. 1994. A Dynamic Theory of Organizational Knowledge Creation, *Organization Science,* 5

Nonaka, I., Takeuchi, H. 1997. Criação de Conhecimento na Empresa: Como as Empresas Japonesas Geram a Dinâmica da Inovação, *Elsevier*

Nonaka, I., Totama, R., Nagata, A. 2000. A Firm as a Knowledge-Creating Entity: A New Perspective on the Theory of the Firm, *Industrial and Corporate Change,* Vol. 9, No. 1, pp. 1-20

Palmer, I., Dunford, R., Akin, G. 2009. Managing Organizational Change: a Multiple Perspectives Approach. *Mc Graw-Hill International*

Polanyi, M. 1966. The Tacit Dimension, *Doubleday Anchor, New York*

Roberts, J. 2000. From Know-how to Show-how? Questioning the Role of Information and Communication Technologies in Knowledge Transfer, *Technology and Strategic Management* 12: 4 – *Taylor and Francis*

Ruggles, R. 1998. The State of the Notion: Knowledge Management in Practice, *California Management Review,* Vol. 40, No. 3, pp. 80-89

Sole, D. 2002. Sharing Knowledge through Storytelling, *Harvard University*

Scott, K., Svensson, P., Quaranta, L. 2011. Lecture of the Research Design Course, *Lund School of Economics and Management, Centre for Economic Demography*

Saunders, M., Lewis, P., Thornhill, A. 2007. Research Methods for Business Students*, Prentice Hall*

Tan, S. S., Teo, H. H., Tan, B. C., Wei, K. K. 1998. Developing a Preliminary Framework for Knowledge Management in Organizations, *E. Hoadley and I. Benbasat eds.,* pp. 629-631

Tsoukas, H. 1996. The Firm as a Distributed Knowledge System: A Constructionist Approach, *Strategic Management Journal 17,* pp. 11-25

Tsoukas, H. 2003. Do We Really Understand Tacit Knowledge? In *The Blackwell Handbook of Organizational Learning and Knowledge Management ,* pp. 411-427 – *Easterby-Smith and Lyles eds.*

Tuomi, I. 1999. Data is More Than Knowledge: Implications of the Reversed Hierarchy for Knowledge Management and Organizational Memory, *IEEE Computer Society Press*

Von Krogh, G. 1998. Care in Knowledge Creation. *California Management Review,* Vol. 40 No. 3, pp. 133-153

Watson, R. T. 1999. Data Management: Databases and Organizations, *John Wiley, New York*

APPENDIX

BASIC QUESTIONS ASKED TO COLLECT DATA

EXPLICIT KNOWLEDGE

- What are the IT tools that your company uses to manage explicit knowledge? (ex: shared drivers, Intranet, SAP/ERP, Microsoft Share Point)
- Are they widespread through the company or there are different levels of security?
- Do you think that Organizational Memory can bring to some kind of resistance to change?

TACIT KNOWLEDGE – TRANSFER OF T.K. – INTUITION AND POWER

- Do you think that tacit knowledge (know-how of individuals) can be totally transferred?
- Do you think that IT tools can be a substitute of face-to-face contacts between people for the transfer of tacit knowledge, now or in the future?
- What if the use of IT tools would have started in the nursery school? Is it a matter of people who cannot perfectly use them or, instead, the problem relies on the tacitness of some part of knowledge?
- Does your company use some specific methodology for the transfer of tacit knowledge in case of job rotations, departures or retirements? (ex: mentoring, coaching, storytelling, communities of practice, baton passing)
- How can a person in your company be trusted by the colleagues if he/she has an idea coming from intuition and not relating on data/past events? Is it only a matter of power?
- Do you think that the transfer of tacit knowledge can determine a loss of power?