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Knowledge Sharing In Innovation Practice
--- A Community's Perspective

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Chapter One

1. Introduction

The emergence of global competition in almost every corner of the world is bringing innovation to the forefront of both managerial attention and academic research. Innovation, in a new way of doing things, provides new or improved products and processes to the competition that creates and strengthens firms' competitive advantage.

There is not a business in the world that does not want to be innovative in its thinking, product, and processes. At many firms, being first with a concept and first to market are critical just to survive. Innovation has spurted to the top of the ''requisite core competence list'' for companies of all shapes and sizes. Today, firms' success increasingly depends on their capability of innovation.

A mobile phone, a laptop, anything that we can relate to innovation are intrinsically connected to knowledge, these things speak of their collective wisdom in a way that individual work never can. When firms realize innovation begins in individual but won't happen without team effort, they seek a way to promote it – they want to know how to make knowledge shared across individuals, groups, and structural divisions, and how to facilitate or motivate this phenomenon – knowledge sharing - for the emergence of innovation.

To provide an answer to the above questions confronting firms, previous research suggests 'community of practice' (e.g. Brown and Duguid 1991; Nonaka 1994) as a way people share both their work practice and their needs and interests of knowledge. Understanding 'community of practice' becomes central for the study of knowledge sharing and innovation. There, firms see a crucial role it is playing in both of the activities. This study aims at developing our understanding of these two activities with a community's perspective.

1.1 Outline of the paper

As a PhD research proposal, this paper is centered on the critical aspects of knowledge sharing and innovation under the background of global competition. By presenting an array of perspectives for understanding knowledge sharing and innovation, I get a close look at the problem within organizational control that goes central into innovation practice and knowledge sharing activities. To capture the local meanings and develop a broaden understanding, a community's perspective with ethnographical approaches is suggested for the future study.

The paper begins from Introduction, which outlines the significant relevance of knowledge sharing with innovation. The second chapter deals with the concept of knowledge, the types of knowledge with a special focus on knowledge in innovation. It draws out the challenges of intra-organizational knowledge sharing from three perspectives: *stickiness and leakiness, motivation of sharing knowledge, organizational and institutional context*, and argue why knowledge sharing needs to be controlled.

Chapter Three elaborates the multifaceted nature and characteristics of innovation practice. It is described as a creative and knowledge-based work full of uncertainty that needs a special balance of autonomy and control. Based on these central aspects, this chapter re-emphasizes the needs for knowledge sharing in innovation practice and argues the starting point of studying innovation shall stem from day-to-day work, in order to complement the limitation from a managerial standpoint.

In light of the difficulty of knowledge sharing and innovation, Chapter Four brings up the key challenges firms are facing with: how to deal with the paradox of autonomy and control as both of them are necessary for innovation, and then, how to control innovation practice. Some researchers suggest, 'peer interaction' and 'peer reviewing' may be a good way (Sandberg and Targama 2007; Rennstam 2007). In this view, 'community of practice' as the place where peer interaction and reviewing is happening, is central to the study.

Nevertheless, previous studies also point out two problematic issues with community of practice in innovation: intra-organizational 'boundary object' (Carlie 2003) and understanding gap between communities (Bechky 2003). From this point of departure, a community's perspective is suggested to explore the paradox of autonomy and control in practice and for developing a better understanding of knowledge sharing in innovation.

To carry on this study, the last chapter, Chapter 5, explains my considerations of methodology and the relevant methods for approaching the research question. The expected contributions on both theoretical and practical aspects are integrated in Introduction part.

1.2 A hint to the study

Why knowledge sharing is important for innovation? To provide an answer to this question I shall ask about the value of knowledge sharing added to firms. Of course, sharing knowledge is not for the sake of sharing. On one hand, the purpose of sharing knowledge is to combine individual knowledge into collective knowledge, to improve, change or develop specific tasks and activities (McDermott 1990), which facilitate the happening of innovation. On the other hand, innovation itself is a deployment of knowledge (Newell et. al 2002).

However, as this paper will show, innovation is a complex, uncertain and highly problematic activity. It requires individuals with different expertise and experience, across intra-organizational boundaries, working together over extended periods of time on the basis of a common understanding. Innovation is not simply about R&D, it occurs throughout mainstream work practice (Newell et. al 2002).

To develop and implement innovation, knowledge sharing has an important role to play. A typical example might be the process of new product development. People from various functional units of different occupations always need to

share their knowledge across their working places, sometime even across national borders to work on the same project.

Although it is relatively easy to draw the conclusion from the literature that 'community of practice' represents a major vehicle for knowledge sharing and innovation (e.g. Carlie 2003; Bechky 2003; Newell et. al 2002), sharing knowledge is not easy. As a human behavior, it is embedded into social interaction between individuals (Nonaka 1994). 'Managing' innovation and knowledge sharing is an unarguable difficult and problematic task. Bringing individual knowledge together and deploying it to innovation practice give rise to the need for knowledge sharing within the firm.

1.3 Research Question

Above discussion hinges on a loosely structured research purpose, that is to provide an understanding of knowledge sharing in innovation practice. This accordingly leads to the research question that is how we understand the way knowledge is shared within and across communities of practice in innovation practice.

1.4 Possible Contributions

To respond to the research question, an ethnographically inspired approach relying on storytelling methodology is adopted for the aim of capturing the "local meanings" (Prasad 2005) of stories about innovation. Following an ethnographic tradition shall provide me with the lens to observe social interaction and understand the 'natives' in the world of study – innovation practice.

"Stories" about the situated innovation practice and knowledge sharing have been quite few in previous studies and less of them have tackled the empirical problems within and across community of practice. This study aims at overcoming the limitation in the literature.

This study is highly necessary not only in light of the complexity and uncertainty of R&D activities, but also for the need of effective and efficient innovation. Especially in the background of global economy recession, innovation becomes more important because it can lead to cost saving and higher performance.

The research is designed to be applicable in an international context and shall therefore be of value to managers in multinational corporations. For researchers it shall offer a nuanced view of knowledge sharing and innovation with a rich description of the 'reality' in organizational practice. It is expected to contribute to the study of 'community of practice' in particular.

Chapter Two

2. Knowledge and Knowledge Sharing in Organization

Managing knowledge and innovation is arguably the most important challenge being faced by many kinds of organizations across both the private and public sectors in the years to come. Knowledge sharing, for example, has been heralded as a useful and new approach to the problems of knowledge 'stickiness' and innovation confronting today's firms in our knowledge era.

2.1 Understanding Knowledge

Although the term 'knowledge' has been widely discussed from various orientations by philosophers, sociologists, management guru and researchers, it is still difficult to filter out a 'convenient' definition for us to understand knowledge in a concrete way.

2.1.1 The concept of knowledge

When talking about knowledge in organization, a number of researchers refer to Nonaka's (1994) framework and underlines Polanyi's (1958, 1966) studies to describe knowledge; some of them refer back to Plato's point of view that sees knowledge as the "justified true belief" (e.g. Nonaka 1994; Alvesson 2001; Newell et. al 2002).

Within the context of business as a functional resource Alvesson (2004) loosely defines knowledge as representing a "truth" or at least something instrumentally useful on a particular subject and/or a set of principles or techniques with material or social phenomena to produce the desired outcome (p. 41), albeit he insists that knowledge is a slippery and elusive concept which is hard to frame (p. 45).

A pragmatic view of knowledge can be found in Davenport and Prusak's (2000) who see management knowledge is embedded not only in documents or repositories, but also in organizational routines, processes, practices, and norms. A similar point was made by Kalling and Styhre (2003) who describe knowledge is ''somewhat ambiguous construct, being manifested in embodied practices and emotionality as well as being entangled with the material'' (p. 136). Alvesson's (2004) suggestion of accepting the looseness of the concept and appreciate the ambiguity of knowledge illuminates the importance of having an open mind in understanding knowledge.

2.1.2 The types of knowledge

The recurrent used definition of knowledge has drawn a distinction between two types of knowledge: 'tacit knowledge' and 'explicit knowledge' (e.g. Polanyi 1958, 1966; Nonaka 1994; Szulanski 1996; Alvesson 2004) although some voices argue that the two types are inseparable (Tsoukas 1996). Other kinds of classifications of knowledge are rather based on different epistemology and ontology, dividing knowledge into social/individual, collective/organizational, formal/contextual, etc (e.g. Spender 1995, 1996; Whalley and Barley 1997; Davenport and Prusak 1998; Newell et al. 2002; Kalling and Styhre 2003; Alvesson 2004; Rennstam 2007; Jonsson 2008).

In Polanyi's (1966) widely cited definition, explicit knowledge is defined as the type of knowledge that is transmittable in formal, systematic language; it is often referred as 'codified knowledge' in some other literature (e.g. Kalling and Styre 2003; Jonsson 2008). The most distinct feature of explicit knowledge is that it can be expressed in words and numbers. Because of this, IT (Information Technology) and ICT (Information Communication Technology) based tools are recognized as the major vehicle for sharing explicit knowledge (e.g. Alvesson 2004; Newell et. al 2002; Kalling and Styre 2003; Mangusson 2004).

Tacit knowledge, on the other hand, carries a 'personalized' quality, which is deeply rooted in action, commitment, and involvement in a specific context

(Nonaka 1994). Since the creation of tacit knowledge is from social interactions (Nonaka 1994), much literature suggests that sharing tacit knowledge is best through ‘‘community of practice’’ (e.g. Brown and Duguid 1991; Nonaka 1994), the other similar cognitive approaches include ‘‘network’’ (Newell et. al 2002) or ‘‘networking’’ (Magusson 2004) and ‘‘face-to-face interactions’’ (Kalling and Styre 2003).

From the above arguments, we can describe knowledge in innovation practice is of two types: explicit and tacit innovation knowledge. The explicit one is the formal or theoretical knowledge written in the literature, brochures, manuals, or in other forms of text. The tacit, on the other hand, exists in soft skills of innovators (i.e., how to use their skills to design a tool, how to interact with their team members). For Alvesson (2001), it can be a mindset, an understanding of the tasks associated with a loose framework, intelligence, and a general understanding of the area.

2.2 Understanding Knowledge Sharing

Knowledge sharing, it is said, is a fairly new concept developed from knowledge management studies, but has emerged as an individual field with highly influence from strategic management literature.

2.2.1 The idea of knowledge sharing

The premise of knowledge sharing is that knowledge, like other organizational assets, is capable of being disseminated, transferred, diffused, shared and distributed within and between organizations, communities of practices and departments (e.g. Szulanski 1996; Kalling and Styhre 2003). The difference of knowledge with other organizational assets is that knowledge is often expressed in the form of individual and collective behavior.

A good starting point of understanding knowledge sharing is from the process of knowledge creation. Nonaka and Takeuchi (1995) highlight the role of social interaction in knowledge creation by writing ‘‘knowledge is created and

expanded through social interaction between tacit knowledge and explicit knowledge'' (p. 61). In such social interaction, tacit knowledge is often believed to play a key role (e.g. Nonaka 1994; Hatch and Dyer 2004); by contrast, explicit knowledge is regarded as ''the tip of the iceberg of the entire body of possible knowledge'' (Nonaka 1994:16).

A working definition of knowledge sharing can be drawn out in the literature - knowledge sharing is centered on the question about how the firm translates or transmits individual knowledge into collective knowledge (e.g. Nonaka 1994; Carlile 2004;Kuhn and Jackson 2008). Kalling and Styhre (2003) describe in a concrete way knowledge sharing is embedded in day-to-day work as a strategic capability; it is manifested in organizational practices by meetings, shop-floor discussions, joint work, and in a multiplicity of different activities that take place in organizations aiming at sharing know-how, insight or ideas.

As mentioned before, from a strategic management perspective knowledge in organization is depicted as a dynamic organizational asset that is used to create sustainable competitive advantage, subject to first mover advantage and grows when being used (Davenport and Prusak 1998). From a resource-based view (assuming heterogeneity of resources are the source of competitive advantage (Barney 1991)), organizational knowledge is 'firm-specific' and 'inimitable' (Teece et. al 1997; Hatch and Dyer 2004) that it can be regarded as ''an idiosyncratically synergistic resource'' (Langlois and Robertson 1995), which is difficult to acquire and communicate.

2.2.2 Knowledge sharing in organization is a dynamic activity

Many researchers claim that knowledge sharing is an exchangeable term of 'knowledge transfer' (e.g. Jonsson 2008; Foss 2006; Orlikowski 2002), others rather argue the whole process of knowledge sharing include knowledge creation, distribution, and transfer (e.g. Tsoukas, 1996; Soekijad & Andriessen, 2003; Kalling & Styhre, 2003).

If we take the assumption that knowledge creation is a dynamic activity (Nonaka 1994), so is knowledge sharing. My reasoning is based on the nature of knowledge - socially constructed and attained by individuals. When knowledge is shared from one to another, the recipient's existing knowledge is integrated into new knowledge from the source while attaching the specific circumstantial factors, e.g. organizational culture. The new knowledge the recipient has now is not the same as the knowledge from the source, but a brand-new one that has combined the recipient's old knowledge with the source's new knowledge. Because the process of sharing and integrating happen simultaneously, it is problematic to equalize knowledge sharing with knowledge transfer, as apparently knowledge sharing includes the creation and development of new knowledge.

2.3 The Challenges of Sharing Knowledge in Organization

The challenges of sharing knowledge in organization reflect on three perspectives: the ''sticky-yet-leaky'' nature of knowledge; willingness of sharing; organizational and institutional context.

2.3.1 Stickiness and Leakiness

In terms of nature of knowledge, the literature has put focal point on two central aspects: stickiness and leakiness (e.g. Wernerfelt 1984; Szulanski 1996; Brown and Duguid 2001). These two feature of knowledge have brought different challenges to knowledge sharing - on one hand, knowledge is ''sticky'' that it does not travel easily; on the other hand, it is ''leaky'' that it is hard to be protected.

In specific, the discussions around ''stickiness'' focus primarily on the barrier to knowledge flow within intra-organizational borders; the problem with ''leakiness'' is however concern of the external 'undesirable' knowledge flow across inter-organizational boundaries, underling loosing important organizational knowledge to the competitors (Wernerfelt 1984; Szulanski 1996; Brown and Duguid 2001).

Former research shows that the problem with stickiness seems more perplexing than external leakiness (Teece et al. 1997; Brown and Duguid 2001). As a consequence, the stickiness of knowledge hinders firms from developing new competences quickly (Dierickx and Cool 1989), which, in turn, becomes a barrier to innovation.

Stickiness and leakiness are two sides of the same coin. In Brown and Duguid's words it is because knowledge is ''sticky-yet-leaky''. Knowledge, such as ideas, insights, inventions, and practices that are unable to travel within the organization can prove to be quite capable of traveling to competitors (Brown and Duguid 2001). With this view, we may see a firm's competitive advantage to a great extent lies on its ability of sharing knowledge within the organization, and simultaneously preventing knowledge from leaking across potentially porous boundaries.

2.3.2 Motivation

Much of the literature has discussed the individuals' motivation of sharing knowledge is a critical barrier to knowledge sharing (e.g. Stein and Ridderstråle 2001; Kalling and Styre 2003).

Several reasons can explain why people are reluctant or unwilling to share their knowledge. Firstly, knowledge is viewed as a personal asset, especially when the knowledge is a sort of esoteric expertise, sharing it will risk them loosing their competitive advantage. Secondly, sharing knowledge in certain cultural context, especially in oriental cultures, is sort of showing off; as a result, people do not dare to proceed. Thirdly, sharing knowledge is sharing power. According to Foucault (1976, 1980) knowledge and power are intrinsically related - knowledge creates a space for the exercise of power rather than revealing truth, knowledge creates truth. Underneath knowledge there is a hidden but dominant power.

2.3.3 Organizational and Institutional Context

The bottom line of knowledge sharing is that knowledge is detained by individuals that it requires various conditions to make it happen. Clark (2000) argues that the nature of social interactions varies according to the local organizational and institutional context. It is also stressed by Asheim and Gertler (2005), knowledge sharing requires a supportive culture, a shared institutional environment, and personal knowledge based on past history of successful collaboration or informal interaction (in Fagerberg et al. 2005).

Organizational and institutional context is a broad scope, embracing the factors of organizational culture, environment, norms and values. As described before, tacit knowledge is 'contextual' (e.g. Rennstam 2007) and 'firm-specific' (e.g. Hatch and Dyer 2004) that sharing tacit knowledge in particular needs a favorable organizational and institutional support. Behind knowledge sharing individuals already share some basic commonalities, such as the same language, common ''codes'' of communication, shared conventions, norms and values. The need for support on the other hand illuminates the importance of organizational control, which I will look insight into in the following chapters.

Chapter Three

3. Innovative Practice and Knowledge Sharing

My aim in this section is through summarizing the central aspects of innovation practice exploring the complex relationship of innovation and knowledge sharing and, thus finding a way to develop a better understanding of the two human activities – innovation and knowledge sharing.

3.1 Innovation

Innovation might be one of the most popular words nowadays. We often hear it in politics, economics, international organizations and so on. Despite of this popularity, in organizational studies, innovation management is still a fairy young area.

3.1.1 Defining innovation

In general, the term 'innovation' means a new way of doing things. Broadly, it underlines changes from incremental to radical, even towards revolutionary changes in thinking, products, processes, and organizations. A good starting point of understanding innovation is from the distinction between invention and innovation - ''invention is the first occurrence of an idea for a new product or process, while innovation is the first attempt to carry it out into practice'' (Fagerberg 2005:4).

In similar to the concept knowledge, innovation is also a fuzzy word. Historians, economists, geographers, and sociologists usually use their own tongues when talking about innovation that their tribes' characteristics often attach innovation with different 'languages'. Innovation is a broad and pervasive phenomenon that goes on everywhere and interacts with diffusion (Fagerberg et. al 2005). In light of the way to understand knowledge, innovation shall be understood as a loosely defined concept as well. Kline and Rosenberg (1986) point out:

"It is a serious mistake to treat an innovation as if it were a well-defined, homogenous thing that could be identified as entering the economy at a precise date – or becoming available at a precise point in time" (p.283).

Nevertheless, from Van de Ven's (1986) influential work we could draw out a working definition for innovation that it is "the development and implementation of new ideas by people who over time engage in transactions with others in an institutional context" (p. 591). This definition implies central to innovation is the social construction of knowledge and the process of sharing knowledge in transactions with others.

Social networks and personal interactions are fundamentally influencing innovation, including inter-firm networks, educational systems, professional and occupational groups, regional networks, etc (Newell et. al 2002:151). Communities of practice in work place are naturally of great importance in innovation setting.

3.1.2 A different focus - innovation practice

Previous studies on innovation have favored a managerial perspective that is centered on the question about what firms, in particular, senior managers can do to 'manage' innovation (especially Van de Ven 1986; Feldman 1989; Nonaka 1994; McGrath 2001; Tidd et. al 2001; Fagerberg et. al 2005).

Among them, the majority has chosen the point of departure from a managerial position. For example, Van de Ven (1986) asserts that to understand the process of innovation is to understand the factors that facilitate and inhibit the development of innovations from a managerial viewpoint. However, it is not unproblematic under today's circumstance.

First of all, we shall consider the shift of management paradigm that has taken place in many firms from using direct control tools with means of specific rules and instructions to the development of more indirect techniques based on vision,

mission, culture and values. Under this shift, on one hand, leadership tends to be more dialogue rather than authority (Sandberg and Targama 2007). Top-down corporate vision can rather be a poor guide to innovation strategies (Pavitt, 2002; Fischer 1994; McGrath 2001). On the other hand, people's actions are not controlled by external conditions, but by their understanding of the conditions, which makes managing innovation more difficult.

In consideration of the changes in the past decade, the focus of this study is moved from the level of managerial view to the level of work practice. A study based on day-to-day work, through two descriptions of what workers do and what is characteristic of their work (Orr 1996) a new positioning of research will enable me to construct a holistic understanding of innovation practice, such as in new product development. With a practice-oriented perspective, reactions between different 'actors' and 'audiences' can be portrayed too.

In the following text, theories in knowledge management and innovation management in combination with my own arguments outline the central aspects of innovation practice.

3.2 Central Aspects of Innovation Practice

Understanding the characteristics of innovation practice is vital for exploring the problems in the interplaying relationship of knowledge sharing and innovation. In this section, I illustrate that creativity, knowledge intensiveness, uncertainty, and a special focus on balancing autonomy and control are the most central aspects of innovation work.

3.2.1 Creativity

The most distinct aspect of innovation practice might be its creative character. Innovation typically involves creativity, but it is not identical to it. Innovation involves acting on the creative ideas to make some specific and tangible difference in the domain in which the innovation occurs. As Amabile et al. (1996:1154) propose: "All innovation begins with creative ideas… We define

innovation as the successful implementation of creative ideas within an organization''. In this view, creativity from individuals and teams triggers innovation, albeit individual creativity is necessary but not sufficient for innovation - innovation is more or less a collective activity and team effort (Van de Ven et al. 1999; Kelley 2001).

The widely agreed view of the relationship between creativity and innovation sees creativity as the basis for innovation, and innovation is the successful implementation of creative ideas within an organization (Amabile et al. 1996:1155). The dividing line between creativity and innovation can be draw as creativity may be displayed by individuals but innovation occurs in organizational context only.

3.2.2 Knowledge intensiveness

It has been broadly discussed that knowledge plays a crucial role in innovation practice, not least in Van de Ven's (1986) definition quoted above, see also Nonaka 1994; McGrath 2001; Tidd et. al 2001; Fagerberg et. al 2005. Knowledge intensiveness is unarguably one of the major aspects of innovation work.

A thorough discussion of knowledge intensiveness is in Alvesson's (2004) theories of knowledge work and knowledge-intensive firms. In his book, he categorizes knowledge-intensive firms (KIF) into Professional Service Firms (PSF) and R&D (Research and Development) firms. With reference to his definition, R&D type is associated with high-tech and science-based work that offer tangible products whereas PSF type is dependent on rhetoric communication and symbolism with intangible products.

Since innovation work is consistent in the form of R&D in organizational practice, R&D is regarded as the core activity of innovation. A convenient definition from the key OECD document[1] for the collection of R&D statistics

[1] The key OECD document for the collection of R&D statistics is the *Standard Practice for Surveys of Research and Experimental Development*, better known as the *Frascati Manual*, which has been continuously monitored and modified through the years.

defines ‘‘R&D as comprising both the production of new knowledge and new practical applications of knowledge’’ (OECD 2002, in Smith - Fagerberg 2005:153). This definition reemphasizes the knowledge intensive feature of R&D activities.

Back to Alvesson’s (2004) work, he summarizes the characteristics of KIF are:
1) highly qualified individuals doing knowledge-based work, using intellectual and symbolic skills in work; 2) a fairly high degree of autonomy and the downplaying of organizational hierarchy; 3) the use of adaptable, ad hoc organizational forms; 4) the need for extensive communication for coordination and problem-solving; 5) idiosyncratic client services; 6) information and power asymmetry; 7) subjective and uncertain quality assessment (p. 21).

Even though according to Alvesson, 5) and 6) are not relevant (they are only regarding professional service firms) the other five characteristics are identified in R&D firms, I would argue it is problematic to include the 7) – ‘subjective and uncertain quality assessment’ – in terms of the strict product requirements for R&D outcomes. Since quality is a determinant factor of the success of innovation products, quality assessment should be ‘objective and certain’ rather than ‘subjective and uncertain’.

Hence, I filter out four aspects to combine with my arguments. These four aspects summarized from Alvesson’s work are respectively: 1) knowledge-based work and knowledge workers consist of innovation groups; 2) high autonomy is granted; 3) flat structure and flexible control; 4) frequent communication and constant problem solving.

The first aspect conceptualizes workers who are involved in innovation practice as ‘knowledge workers’. This conceptualization is not only based on the fact that they are highly educated; it is more broadly based on their knowledge structure where there is a large portion of knowledge is from their work practice.

Innovation knowledge is a complex and specific combination of two types of knowledge, in Rennstam's words (2007), it consists of ''formal'' and ''contextual'' knowledge. Formal knowledge refers to 'theoretical' knowledge achieved from education and contextual knowledge is developed in daily work practice and activities such as ''on-the-job trainings'' (Rennstam 2007). Contextual knowledge is closely associated with the esoteric expertise of workers. Such esoteric expertise often brings innovation workers in the situation of having the deeper sight into the problem area. Their situation trains themselves becoming the key persons who are most familiar with specific actual problems in work practice. In fact, even if managers may have more general experience and broader overview of problem solving, they often show less understanding of work details under some specific conditions than their subordinates.

This idiosyncratic situation in innovation practice, on the other hand, highlights the need for knowledge sharing. Asheim and Gertler argue that innovation has come to be based increasingly on the interactions and knowledge flows between economic entities such as firms, research organizations and public agencies (in Fagerberg et al. 2005:293).

Moreover, the character of knowledge intensiveness is closely connected to the aspect of uncertainty in the sense that performing uncertain work can be said to require more knowledge than performing certain work (Cooley 1980, in Rennstam 2007:14).

3.2.3 Uncertainty

The fact about innovation is that the most important ones go through drastic changes in their lifetimes. Citing Kline and Rosenberg's (1986) words, these ''changes that may, and often do, totally transform their economic significance'' (p. 283, in Fagerberg et. al 2005). However, it is not just change incurs uncertainty, complexity of innovation practice and unpredictable outcomes all lead innovation to an uncertain status.

First and foremost, innovation is complex, involving many variables whose properties and interactions (and economic usefulness) are understood imperfectly (Pavitt 2002, in Fagerberg et al. 2005). The complexity of innovation practice particularly reflects on work tasks, which are often non-repetitive and not predefined in details. Innovation is usually organized around projects, which of course require outcomes but firms cannot accurately predict the outcomes, neither on technical nor commercial perspective (Pavitt 2002, in Fagerberg et al. 2005).

Secondly, the uncertainty in innovation brings the most influential consequence to firms, because firms are not able to explain fully and predict accurately the technical performance of major innovations or their acceptability to potential users; in some cases it is even harder to identify the potential users. This situation results in a tendency of innovation workers who tend to be over-optimistic about the costs, benefits, time periods of their proposed project and market demand. As a matter of fact, commercially unsuccessful projects often account for a disproportionate share of corporate R&D spending (Griliches 1990, in Fagerberg et al. 2005).

Although complexity is hardly an exclusive characteristic of work practice, it makes innovation practice complicated and ambiguous when it is mixed with the uncertainty characteristic. Especially when both outcomes and required efforts are uncertain, many knowledge-based interventions seek to eliminate such high uncertainty where control becomes a major tool.

3.2.4 Special focus on balancing autonomy and control

A further characterization of innovation is innovation is an organizational or management process (e.g. Fagerberg 2005; Davila et. al 2006). Davila et al. (2006) wrote: "Innovation, like many business functions, is a management process that requires specific tools, rules, and discipline." In this perspective, management plays a holistic role in the general organizational processes and procedures for generating, considering, and acting on such insights leading to

significant organizational improvements, in terms of improved or new business products, services or internal processes. In short, organizational control is necessary and crucial for innovation.

On the other hand, much of literature agrees that high autonomy allows for innovation. For example, Brown and Duguid (1991) suggest that if the internal communities have a reasonable degree of autonomy and independence from the dominant worldview, large organizations might actually accelerate innovation (p. 54). Top-down management manner does not fit with innovation practice, decentralized and group-based structure is a key organizing principle in innovation (Lam, in Fagerberg et al. 2005).

Nevertheless, a flat and flexible organizational structure also brings challenges to organizational control. As discussed before, individual innovation workers often have more specific and situated knowledge for problem solving than managers. Under a decentralized organizational structure where employees are offered high autonomy, their 'expert' situation often grants them more authority than their formal position. In this sense, traditional means of managerial control may not work well with them.

Thereby, it is suggested that when work is of an uncertain character that requires specific knowledge, deadline is one of the few devices that can be used to control work (Mellström, 1995, citing in Rennstam, 2007:137). In fact, the centrality of time pressure in innovation activities to a large extent stems from the work itself since innovation workers often work with projects, which always have deadlines to follow. Innovation work is to large extent organized around deadlines.

Even though it might be easy to prove high autonomy can promote creativity; control is necessary when there is a high uncertainty in work, previous study shows lack of a sense of control tends to lead employees to suppress themselves and remain at a distance from undertaking effective knowledge sharing (e.g. Yang and Ho 2007).

3.3 Community Approach of Knowledge Sharing for Innovation

An increasing practical and theoretical interest in how firms can manage knowledge for innovation (e.g. Brown and Dugid 1991; Newell et. al 2002; Carlile 2002; Bechky 2003; Hargadon and Bechky 2006) has drawn great attention on a same term 'community of practice' that it is regarded as the most preferable approach of knowledge sharing.

3.3.1 What is 'Community of Practice'

Developed by Lave and Wenger (1991), Brown and Duguid (1991) and Orr (1996), the idea of community of practice refers to what people share are not only work practice but also their knowledge needs and interests. The communities, placed at the intersection of horizontal and vertical flows of knowledge within the organization, serves as a bridge between the individual and organization in the knowledge creation process.

3.3.2 Community of Practice in innovation

In terms of innovation, it is suggested that firms can use concurrent engineering and cross-functional teams to improve time to market, technology transfer and innovation (Eisenhardt and Tabrizi 1995, Leonard and Sensiper 1998, citing in Bechky 2003:312). Such concurrent engineering and cross-functional teams are commonly referred to community of practice in academia.

"The innovation journey is a collective achievement" (Van de Ven et al. 1999: 149). In order to turn an invention into an innovation a firm normally needs to combine several different types of knowledge, capabilities, skills, and resources (this is why innovation is also defined as a new combination of ideas, resources and capability (Fagerberg 2005). Firms need to require production knowledge, skills and facilities, market knowledge, a well-functioning distribution system, sufficient financial resources, and so on. People from production, marketing,

sales and finance thus need to create a shared understanding to reach the same goal.

However, Fiol (1994) is concerned that even in stances where communication is successful, creating shared understandings may still be problematic (citing in Bechky 2003:312). The differences in functional communities are deeply rooted in different local understandings based on individuals' expertise and experience. As a consequence, these differences can result in being trouble or constraint to intra-organizational knowledge sharing (Bechky 2003; Carlile 2002). Taking all the notions of arguments together, I form my research problematization in the next Chapter.

Chapter Four

4. Towards Problematization

To begin with the problematization, the point of departure is from an empirical problem in firms' innovation practice that is often referred as ''innovators' dilemma''.

4.1 Problematic Control

Control always turns to be more problematic in knowledge-based work (Rennstam 2007); controlling innovation is, however, more difficult.

4.1.1 Innovators' dilemma - the inseparability of autonomy and control

Although firms have been putting a special focus on balancing autonomy and control in innovation practice, real organizational life always shows favor to more control rather than more autonomy. It is understandable that firms need to control their innovation activities - not only for the sake of 'innovation budget', what is more important is that they need to have the 'real' innovative products out to the market. Control is naturally highly necessary.

When firms are attempting to balance autonomy and control, they will eventually face a serious problem. As Fischer et. al (1994) describe, on the one hand they have to control their activities which requires a certain stability; on the other hand, they need to be creative and innovative, requiring a certain amount of autonomy, which in turn may result in instability. Besides Fischer et. al (1994), a number of other researchers have also shown their concern, such as Feldman, 1989, Tidd et al., 2001, McGrath, 2001, Gebert et al., 2003. In Tidd et al.'s (2001) words, the situation of innovators is like ''riding two horses'' (p. 14) that becomes ''innovators' dilemma''.

In spite of the difficulty in balancing autonomy and control, it is argued that control and innovation do not necessarily oppose each other (Fischer et. al 1994). Instead, they are inseparable aspects of managerial action (Feldman 1989:83). Both Fischer et. al (1994) and Feldman (1989) share the view that innovation activities require the simultaneous regulation of autonomy and control to promote creativity and experimentation and meanwhile produce results that can be manufactured, marketed, and institutionalized.

In contrast, Fischer et. al (1994) emphasize that the burden of innovation is placed on control for the reason of cost efficiency and outcome predictability. Hence, the problem is not about how to balance autonomy and control, it is rather about how to control to keep the balance.

Based on the above discussion, I argue that firms are not facing a 'dilemma' of autonomy and control, but a 'paradox'. Talking about 'dilemma' implies a situation in which a difficult choice has to be made between two or more alternatives (in most case they are on the opposite sides); yet, 'paradox' implies a situation that combines contradictory features, where such choice in dilemma does not have to be made but co-exist simultaneously. In other words, instead of talking about 'either…or…', the question is about 'how to have both'.

4.1.2 Horizontal control for innovation

Based on the arguments throughout the whole paper, 'peer interaction' (Sanderberg and Targama, 2007) and 'peer reviewing' (Rennstam 2007) as suggested in previous relevant studies regarding managing 'understanding' and 'complex work' are proposed as a method of horizontal control for innovation and knowledge sharing.

First of all, the multi-faceted innovation work to great extent is embedded into social interaction that organizational control needs to engage into the place where these interactions happen, such as community of practice. Because of the high degree of independence and discretion in innovation, instead of taking

managers as the major source of control, organizational control can use employees' own judgment based on 'informal peer interaction' (Sanderberg and Targama, 2007).

Furthermore, as stressed earlier, deadline plays an important role in innovation work. Managing innovation around deadlines does not only urge the progress of innovation projects, but also unite team members to work together under the same pace, either ''meet deadline at the same time'' or at least ''dealing with deadline'' together (Rennstam 2007). In this perspective, control facilitates social interaction between team members, which consequently may promote knowledge sharing.

However, as discussed in Chapter Two, sharing knowledge is not easy. Getting fellow employees to buy into the specific knowledge sharing cultural norms through applying managerial control is a ''Sisyphean task'' (Fagerberg et al., 2005). Managers may be able to control the operative work, but it is not just because of their higher position. In this sense, 'peer interaction/reviewing' in community of practice is a good way to tie up each other, both for the sake of catching up project deadlines and knowledge sharing.

4.2 A Community's Perspective

To explore the problem with organizational control and develop the understanding of knowledge sharing in innovation practice, a community's perspective is a good way to begin with.

Communities are one important social milieu within which knowledge is situated (Orr 1990, Lave and Wenger 1991) and collective competence is created (Sandberg and Targama 2007). To make innovation happen, collective competence is the key.

4.2.1 Boundary object in knowledge sharing across communities

Sandberg and Targama (2007) characterize collective competence as an interaction between groups of individuals in performing a specific task that is not just related to any single individual. They argue that by the means of socialization involving both an individual and a collective learning, a shared understanding can be created and the collective competence can be developed and maintained. This pragmatic view brings an assumption to innovation - knowledge sharing promotes the creation of collective competence, which is believed s the basis of innovation.

Nevertheless, through his study of three occupational communities: engineers, technicians, and assemblers on a production floor, Bechky (2003) demonstrates the difficulty of co-creating common ground that transforms their understanding of the product and the production process. His study implies that the idea of creating 'collective competence' is not an easy task.

The barrier to intra-organizational knowledge sharing is well examined by Carlie's (2002). In his investigation of cross-functional work at an automobile manufacture, he identified 'boundary object' – artifacts shareable across problem-solving contexts – enable a shared language, a view of differences, and a process that can alter individuals' knowledge.

The difficulty of intra-organizational knowledge sharing reflects not only on hard communication, but also on resolving the negative consequences by the individuals from each function. People have to be willing to alter their own knowledge to be capable of influencing or transforming the knowledge used by the other functions. However, the fact is that individuals are often reluctant to alter their in-group knowledge to accommodate their out-group knowledge developed by others. Knowledge of one community may become unintelligible to another.

In light of Carlile's (2002) work, Bechky (2003) further argues the difficulty of intra-organizational knowledge sharing is rooted in the difference of the locals'

languages, the locus of their practice, and their conceptualization of the product. Particularly in different occupational communities, multiple meanings are created from various sources, such as subcultures, occupations, functions, and networks.

4.2.2 A perspective based on practice in communities

Building up from previous studies, innovation knowledge is situated in the specific communities because it emerges through the specific activities and constructed within a particular social context in the communities. A perspective of studying practice in and across communities shall be valuable to this study.

Julian Orr's (1996) ethnographic study of copier technicians explores three themes - practices, practitioners, and learning - gathered under the heading of 'work' and situated in geographic spaces, both the team's territory and places (Yanow, 2006). Orr's (1990) portrayal of knowledge as a matter of conversation and social practice reaffirms the view that researchers shall trace knowledge as being constructed in and through communication process. Even Orr draws attention to this, a consideration of the community's structuring of knowledge is still absent in most cognitive work according to Carlile's (2002) investigation.

With a community's perspective, I shall be exploring what it is that people in innovation communities actually do, developing practice-based understandings of knowledge sharing, attending to the settings - the places and spaces - in which those practices take place. For this purpose, not only the interaction between managers and employees, but also the peer interaction between workers is interesting to this study. An ethnographically inspired research is thus designed to capture the 'local meanings and understanding' within and across different communities in innovation work.

Chapter Five

5. Methodology Considerations

In consideration of methodology, a good starting point shall stem from the research purpose. For an explorative study, such as this one, an open approach is helpful. As stated in the very beginning of this paper, my research purpose is to develop a nuanced understanding of innovation work in connection with knowledge sharing, the context of study – innovation work practice, more specifically, communities where innovation emerges and knowledge sharing happens is central to the whole study.

5.1 Research Design

This research is designed by taking two steps: a pilot study to gain a pre-understanding and a thorough fieldwork to explore the empirical problems in organizational practice.

5.1.1 The case – Trelleborg, a knowledge-based technology firm

The sponsor and partner company for this research, Trelleborg, is a global engineering group founded in 1905 with their headquarter located in Trelleborg, Sweden.

The company's annual sales in 2008 were over SEK 31 billion with about 23,000 employees in 45 countries. Its share has been listed on the Stockholm Stock Exchange since 1964 and is listed on the OMX Nordic List, large cap.

The company comprises four business areas: Engineered Systems, Automotive, Sealing Solutions and Wheel Systems. They supply both products and solutions to various industries, including aerospace, automotive, construction, industrial supply, infrastructure construction, machine tool, marine solutions, offshore oil and gas, printing, tires and wheels, transportation equipment, etc. Their leading

positions are based on advanced polymer technology and in-depth applications know-how. Knowledge-based and technology feature of the company make it more interesting for this study.

5.1.2 The pilot field study – for gaining pre-understanding

Sandberg and Targama (2007) argue that the development of understanding unfolds in a circular rather than in a linear manner where the basis of understanding is ''pre-understanding''. In order to create a pre-understanding of knowledge sharing and innovation, a pilot study is highly necessary. Through 'taking the first cut' out of the 'reality' a pre-understanding with a general view shall be gained, which, in turn, will support the development of a deeper understanding.

The point of departure of this pilot study is to identify key factors behind innovation, which puts focus on knowledge-related factors, motivational factors, and the organizational context around communities. The role of knowledge sharing is connected to all these categories as argued before throughout the paper.

Specifically, the purpose of this pilot fieldwork is to have an overview of the general strategies and priorities concerning innovation with the understanding of major areas of innovation, and attempt to grasp the idea of existing challenges to internal knowledge sharing. Given these ambitions, the study will include the following general sources of information:

- A "Leader" perspective: representatives that can indicate the relative importance of innovation and knowledge sharing.
- A "Genius" perspective: representatives that work with different phases of innovation, that could come from e.g. R&D, design, sales/marketing, and material and technology sourcing.

- A “Champions” perspective: representatives that facilitate innovation and NPD – and knowledge sharing, e.g. staff personnel, project leaders and local line managers.

The above information shall help me get an immediate picture of the current status and give leads to main studies toward more specific perspectives with communities in innovation work practice.

5.2 Ethnographical research tradition

The empirical material for this study will be collected from lived stories about innovation, focusing on the social interaction between people within the same communities and across different communities. As a study focus on work practice, ethnography is adopted as the research tradition to portray the ‘whole life’ of ‘natives’.

5.2.1 Ethnography and its relevance of this study

Developing an understanding and interpreting a phenomenon to great extent requires a good understanding of culture. Ethnography as a representative cultural study may be the best way to capture the local meanings.

Ethnography is rooted from cultural anthropology; in the past two decades, it has developed as a way to understand ‘‘natives’’ in their own cultures (Prasad 2005). The prime reason of taking ethnography for guiding this study, in Prasad’s words, it is because ‘‘ethnography is conceptualized predominantly as a mode of data collection involving the development of close connections with subjects and situations being studies’’ (2005:75). With an ethnographical approach, I shall be able to build the close connections with the subjects and situations of study. Specifically, studying communities of innovation practice can offer a way of contextualizing innovation activities.

Another reason to support the idea of taking an ethnographical approach is because ethnography provides an open mind to researchers. In Fetterman’s

(1989) words, it will allow me ‘‘to explore rich, untapped source of data not mapped out in the research design’’(p. 12). To put it simple, an open mind may help me unpack the ‘black box’ and explore the ‘mysteries’ in the field of study.

In general, ethnography as the most popular label of choice to designate intensive and lengthy fieldwork will provide a cultural perspective with an open mind for this study. Yet, in contemporary organizational studies, the application of classical ethnography has numerous obstacles.

5.2.2 Why not classical ethnography

The way classic ethnographers work is described as “participates in people’s lives for an extended period of time, watching what happened, listening to what is said, asking questions” (Hammersley & Atkinson 1983:2). Taking the position of a ‘‘native’’ is central to classic ethnography; however, ‘‘turning native’’ is a tedious work that requires for years of cultural immersion in the field. The difficulty in practices thus makes ‘‘turning native’’ become a ‘‘romantic attempt’’ (Prasad 2005:83).

The most common obstacle to a classic ethnographical research is the proximity to the field. Take Rennstam (2007)’s studies as an example, the proximity to the filed of engineering work was limited to ‘‘the notion of having been among them rather than having lived with them’’ (p. 53). In other words, it is ‘being there’, rather than ‘living there’, which keeps a distance from being native.

For a study about innovation, in a classic ethnographical way, I will need to deal with much confidential information regarding R&D, patent, know-how, etc. Even though I may have opportunity to access into some important documents of the case company, their intellectual property may not be that open to researchers.

Another problem stems from the need for a ‘‘thick description’’. According to Geertz (1973), ‘thick description’ is an insightful narrative of ethnographers’ fieldwork providing with detailed information of the study subject. To have a

‘‘thick description’’ of innovation practice, I shall immerse myself in the local work context, such as being a R&D engineer. Obviously, I am not an engineer and I am not likely becoming one in short time for the sake of this research. This fact will prevent me from fully participating in innovation activities.

In consideration of these difficulties in performing a classic ethnographical research, I replace the label of ‘turning native’ by ‘being there’, and take ‘‘extensive description’’ to replace ‘‘thick description’’. ‘Being there’ implies I will be present in the local culture by paying regular visits to the workplaces, attending group meetings, hanging out with the natives, etc. ‘Extensive description’ underlies my ambition of getting rich details of the field experience through intensive and lengthy fieldwork. The purpose of this relabeling is to stress that instead of performing a classic ethnographical research an alternative way will be taken which will still enquire myself into the local context seeking for local meanings.

Besides the difficulty of conducting ethnographic research, ethnography has been criticized as it tires to represent the subjective meanings, feelings and cultures of others. In specific, the data presented through ethnographic approach is already an interpretation made through the interpreter’s eyes that result in a subjective interpretation. Therefore, multiple interpretations are of great importance for the purpose of exploring ‘reality’. As Sandberg and Tarmaga (2007) suggest, multiple interpretations are fundamental for developing an understanding, while ‘‘the ethnographic study allows multiple interpretations of reality and alternative interpretations of data throughout the study’’ according to Fetterman (1989:12).

Storytelling as a mean to catch multiple interpretations from stories shall be helpful for developing a broadened understanding.

5.3 Alternative way – stories and storytelling

Narrative, stories, and tales, it is said, connect different individuals to the same social events, processes, and organization. As qualitative research methods, they enable researchers to place themselves at the interface between person, stories, and organizations, and to place the person in emotional and organizational context (Maanen et. al, in Czarniawska 1998).

5.3.1 Storytelling in organizational research

Czarniawska (1998) believes a narrative in its most basic form requires at lest three elements: an original state of affairs, an action or an event, and the consequent state of affairs (p. 2). In comparison with narratives, Gabriel (2004, 2009) underlies two distinct features of stories: stories are narratives with plots ''knit events together'', allowing the researcher to understand the deeper significance of an event in the light of others; stories are emotionally and symbolically charged narratives which do not present information or facts about 'events', but enrich, enhance and infuse facts with meaning.

Drawn from the ethnographic tradition (Gabriel 2009), storytelling as a research methodology is ''the preferred sense-making currency of human relationships among internal and external stakeholders in organizations'' (Boje 1991:106). Gabriel (2004, 2009) highlights the importance of using organizational stories and storytelling for organizational research. He argues that organizational stories as the main mode of knowing and communicating in organizations are both inscriptions of past performances and scripts and staging instructions for future performances that is of focus to organizational study. The recognition of the role of stories in organizational research is also in Alvesson and Sveningsson (2008), Barker (2008), etc.

Hence, my purpose of applying storytelling in this study is to conceptualize the organization (Trelleborg) through stories, and by connecting those stories, I shall increase my understanding of the interlocutors' sentiments and actions, to describe the 'reality' in organizational life. Storytelling is a particularly good way

to gain an understanding of knowledge sharing in innovation practice between communities. As Gabriel (2009) suggests, by collecting stories in a particular organization, listening and comparing different accounts, investigating how narratives are constructed around specific events, examining which events in an organization's history generate stories and which ones fail to do so, the researcher gains access to deeper organizational realities, closely linked to their members' experiences (p.2). The next section is an interesting example of storytelling approach for innovation studies.

5.3.2 An example of storytelling approach in innovation study

An individual is closely related to the world, and that the basis of an individual's skills and knowledge is determined by the specific individual's experience (Sandberg and Targama 2007). By offering a rich description of individuals' experiences, stories can help us identify the critical factors in innovation practice and knowledge sharing.

A good example of story about innovation practice might be Tom Kelley's book 'The Art of Innovation'. The case company, IDEO, is an American's leading design firm of a wide acclaim and recognition. This firm brought the world the Apple mouse, the Palm handheld, and hundreds of other cutting-edge products and services. Tom Kelley, the general manager of IDEO, reveals its strategy and 'secrets' for fostering a culture and process of continuous innovation through his stories from the first-hand experience through his 'understanding' and 'observation' phases at work, as a form of instant anthropology to capture the action of innovation.

An inspiring story from his book is about Tiger Woods, when he was winning the U.S. Open golf tournament at Pebble Beach, dominating the field as never before.

''*He seems both intense and utterly calm. His dedication was complete, and his swing and putting were nearly perfect. In spite of what looked like masterful putting in his first round, he insisted that the balls were not going into the hole smoothly enough for him. They were just ''scooting'', he said, not rolling. He stayed*

on the practice green till they rolled beautifully. Butch Harmon, his swing guru, said Tiger was playing better than ever. "He's confident. He's mature," said Harmon. "We've built his swing together, so it's pretty easy to tweak if something goes wrong." --- Kelley (2001:5)

Through this story, Kelley (2001) found a wonderful, enlightening statement – the greatest golfer in history, who appears to be the ultimate solo performer, is actually the product of a team effort, and when the occasional bumps in the road arrive, the going is easier because of that fact (p. 5).

The above example shows storytelling enables us vividly describe 'the reality' and explore the 'mystery' (Alvesson and Kärreman 2007) in the field. There are a number of specific events, moments, actions recorded by stories in organizational practice that we would never get from observations. By narrating these stories, I shall understand community of practice in a unique illuminating way. With a combination of stories collected from documents, interviews, and observations, I shall reveal wider organizational issues, which are viewed, commented upon and worked upon by the local organizational members.

5.4 Data Collection

In the following section, I will discuss how I approach the empirical data – stories - by using three methods and how they complement each other for advancing the understanding.

5.4.1 Document study

Document study is the first phase of fieldwork, which most of the job will be done during the pilot study. An array of documented material about Trelleborg concerning innovation, including the strategies, priorities and major areas of their innovation activities, financial reports, internal company magazines, etc. In general, the following data is important for studying the innovation condition of the company:

- To understand the importance of innovation, an understanding of the role of products, technology, processes and services is important.

- To understand the difference in communities across national boundaries, an understanding of the role of new geographical markets, new segments where is the market pull for innovation, is of great interest.
- To have a basic idea of motivational perspective of knowledge sharing, an understanding of the Trelleborg culture is of important.
- To understand organizational context, an understanding of organizational structure (e.g. relations between line and R&D, sales and production etc), control (both of regular performance and of investment decisions), incentives, value chain configurations, communication channels, internal networks and interfaces are of high relevance.
- To understand the past success and failure of innovation activities, historical events about innovation are also interesting.

After a thorough document study, an extensive and intensive fieldwork is intended to produce an understanding of native innovation work practice in Trelleborg. Guided by ethnography research tradition, with a storytelling approach, the typical techniques are in-depth interviews and observation.

5.4.2 In-depth Interviews

In contrast to questionnaires designed for finding quantifiable answers, in-depth interviews create new understanding because of its openness for answers.

Under the ethnography tradition, in-depth interviews are supposed to be conducted ethnographically, namely, 'ethnographic interview' (Spradley 1979), that is repetitive, open, and extensive interviews aimed at achieving an account of people's work and organizations (citing in Czarniawska 1998:29). Since I am taking an alternative way, rather than pure ethnography, the interview techniques shall be altered as well.

Inspired by Czarniawska's (1998) 'narrative interview': ''chronological relations of events that occurred under a specified period of time'' (p. 29), I label the interviews guided by storytelling methodology as 'storytelling interview'. In

similar with narrative interview, storytelling interview has the same character of 'following up stories in a natural development in serial interviewing, which usually starts with a thematically focused interview.

Furthermore, as both the plot (Gabriel 2004, 2009; Czarniawska 1998) and the metaphors in stories are chosen by the interlocutor rather than the researcher, storytelling interviews carry a precious character of being close to an everyday work life account.

To clarify the style of such storytelling interviews, I categorize them into dialogue-based interview and semi-structured interview. The distinction between dialogue-based and semi-structured interview lies on the purpose of the interview.

Dialogue-based interview is not designed to look for certain answers; instead, it is to have a 'shortcut' of the immediate picture. Therefore, it is more suitable for the early stage of empirical work, such as the pilot field study. In addition to the advantage of taking short cut, dialogue -based interview can allow me to develop my thoughts more freely, and provide me with the chance of following up and dig into new perspectives or deeper meanings in dialogues. In Alvesson and Deetz (2000)'s words, it ''drills'' for new aspects of the phenomenon, and sometimes discovers "serendipity" (Alvesson and Kärreman, 2007).

Semi-structured interview is, however, more efficient when there is a hypothesis or assumption to be testified or answered. Thus, it fits better with mediate or final stage of fieldwork, when I will be equipped with certain understanding of the study. In short, two styles of in-depth interview will be applied for data collection according to different stages of the empirical fieldwork.

5.4.3 Direct observation

Although in-depth interviews may provide me with interesting stories and some details about the study, I have to be aware that ''people cannot talk about the

specific of what they do outside of the context of actually doing it'' (Barley and Kunda 2001, citing in Jonsson 2008:106). To compensate the shortage of interviews, observation is highly necessary, since it verifies the findings from interviews through observer's eyes.

Observation as a research technique is categorized into participant observation and non-participant observation; direct observation and indirect observation (Czarniawska 1998). Participant observation and direct observation have some similarities in certain requirement for researchers, but differ in the way of conducting research.

Participant observation (Czarniawska 1998), as a labeling technique in ethnographic and anthropologic research, requires researcher to participate in the studied practice by becoming a ''gang member''. By contrast, direct observation (Schwartzman 1993) does not require researchers participate in local activities. It refers to a situation in which the researcher is present as an observer, not as a participant.

Erlingsdottir (1999:48) suggests that when the aim is not to ''go native'', direct observation of a certain question during a limited period of time is sufficient. Jonsson (2008:107) agrees on this point and states that direct observation is also an ethnographic approach. Hence, I will use direct observation, rather than participant observation (the reason had been explained before). The direct observation is to be taken through observing places, practices, people, things (documents, machinery, files, folders, etc), meetings, or through shadowing native workers.

However, as John Law (1994) points out, nothing ever happens right where and when the researcher is observing. All those important events happened at some other time, other place. In that, stories collected from documents and interviews will make it up for the missing events from observations.

In conclusion, there might not be any dramatic difference between the material

collected via observations and the material collected via interviews (Czarniawska 1998:31), different techniques would complement one another.

Last but not least, I would like to stress that the arguments, understanding and frame of references in this paper will be developed along with the upcoming fieldwork and by then new aspects will be identified to improve the future study.

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