Opportunities for learning and knowledge creation in practice

by

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Abstract

This study contributes to our understanding of opportunities for learning and knowledge creation at work. Through an interpretive case study the aim is to add insight to the theoretical debate on learning and knowledge creation, as well as inform managerial practice.

The concepts of learning and knowledge creation in organizations have received substantial attention over the past decades. Even so, studies on where and how this learning takes place at work, and on how opportunities and barriers emerge, are few. Thus, this study focuses on how these micro activities enable and/or restrict opportunities for learning and knowledge creation during work. This approach differs from more conventional research on learning and knowledge creation in two aspects. Firstly, it treats physical place and the division of labour as influential in creating learning opportunities and knowledge creation. Secondly, the research is carried out in a public hospital in Norway; a context associated with pluralism rather than the more homogeneous label knowledge intensive.

Findings in this study show a gap between a strategic vision of "becoming a learning organization" and how this is translated and acted upon in ongoing work practices. This is underpinned by a view on knowledge and learning that render work based learning difficult. Findings indicate that the view of knowledge is lopsided and focused on codified knowledge and the view on learning is focused on individual learning in an educational perspective. These views on learning and knowledge manifests themselves in how the physical layout is designed and in the way labour is divided; that on one hand contributes to fulfilling the vision of putting the "patient first" but on the other hand appear as barriers to opportunities for work based learning and knowledge creation.

My conclusion is that interaction as opportunity for learning and knowledge creation is particularly horizontally scarce among peers, and this research calls for a differentiated view of the influence of autonomy and more focus on the influence of the physical layout on learning and knowledge creation in organizations.

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1 Introduction

This study explores the opportunities for learning and knowledge creation in an organization. Learning and knowledge has emerged as the most salient prerequisite for competitive advantage in the knowledge society. During the last decades there has also been a rising acknowledgement of the importance of *learning in the work place* as both complementary to and equally important as an educational approach to learning. This is based on the assumption that all knowledge cannot be articulated and shared in a codified manner, and on an increasing interest in different dimensions of knowledge, like tacit knowledge. There is however a lack of studies on learning and knowledge creation in situ; during task performance. With this dissertation I aim to contribute to this body of research with a study on how and where learning and knowledge creation takes place in different units in a hospital.

Knowledge in itself is by no means a new issue, but has received increased attention due to the high speed of development, globalization, advances within information and communication technology and complex production methods (Castells, 2000). These factors have contributed to the growing interest in learning and knowledge in all fields of society. Knowledge is seen as the most valuable resource in an organization, and learning and knowing as valuable processes for the development of this resource. Learning processes are assumed to need facilitation; hence knowledge management has emerged as a field in its own right.

Theoretically, the field of 'learning in organizations' is fragmented with blurred outlines (for an overview see for example Blackler, 1995; Dodgson, 1993; Easterby-Smith, 1997). During the 1990s several theoretical frameworks for studying and managing knowledge were introduced (Blackler, 1995; Nonaka, 1994; Spender, 1996; Wenger, 1998). In these frameworks, focus is on two particular challenges within the field of knowledge management: the nature of knowledge and the situated nature of learning and knowledge creation.

Organizational learning and knowledge management have largely developed in two main streams. In the community approach (Newell, Robertson, Scarbrough, & Swan, 2002), learning and knowledge creation are seen as collective processes and the focus is on the work situation itself and the social processes in this context. Learning takes place when people interact and this is not solely seen as a cognitive process. It is acknowledged that knowledge has a tacit dimension and this tacit dimension is made visible

through observation and interaction, and thus connects work and learning, and is also labelled the practice based approach.

Tacit knowledge, situated learning, and collective processes have however not been the main focus in this field until recently. On the contrary, the majority of recent empirical contributions have focused on explicit knowledge; knowledge that can be pinned down, codified and fed to the computer for retrieval independent of time and place (Bij, Song, & Weggeman, 2003; Kusunoki, Nonaka, & Nagata, 1998; Powell, 1996). In these studies, learning and task performance are seen as divided processes, and learning is mainly associated with arenas removed from the actual work itself.

In a different vein and with a different focus, there have been studies of "work itself" and Yanow (2006) refers to a line of practice based studies of 'what people do in organizations', which includes studies of both knowledge intensive firms and of vocational occupational communities. These studies have not specifically focused on learning and knowledge issues, as for example in Orr's study (1996) "Talking about machines", on how photocopier repair technicians work. This was a pioneering study on learning, cooperation and interaction – even without explicitly stating these issues as being under study. Within the contexts of hospitals there has been an increasing focus on social learning initiatives, which represents a move away from seeing ICT as *the* knowledge management tool (Nicolini, Powell, Conville, & Martinez-Solano, 2008). However, several of these studies also have an educational perspective (Doornbos, Bolhuis, & Simons, 2004), and there is a lack of studies of micro activities in work.

Little attention has been paid to the actual place; the shared context, where learning and interaction during work happens. "It has been all too common in organizational studies to ignore the physical settings within which work and organizing take place along with the material objects that "people" that space and help to constitute it" (Yanow, 2006:1751). The *place* has either been taken for granted or has been used as a metaphor. This study is a contribution to help fill this gap and the title of this dissertation: "Opportunities for learning and knowledge creation in organizations" refers to the interaction and the place that facilitates the learning and knowledge creation processes. A physical space, a meeting point, a waterhole, opens the opportunity for learning and knowledge creation (Thompson, 2005).

A shared context is an opportunity for learning and knowledge creation, because knowledge, and especially tacit knowledge, cannot be counted on as flowing freely between the members of an organization if they do not interact or see each other work. Therefore, not only the physical space but

also the manner in which labour is divided and the way employees work together is under study here. In the literature, these contexts and situations are referred to as communities of practice (Wenger, 1998), Ba (Nonaka & Konno, 1998), organizational spaces (Yanow, 2006), the generative building (Kornberger & Clegg, 2004), and learning spaces (Thompson, 2005). This opportunity will vary along dimensions such as type of workplace and occupational group (Handley, Clark, Fincham, & Sturdy, 2006). and in frameworks like *the communities of practice* (Lave & Wenger, 2003) and the concept of Ba (Nonaka & Konno, 1998) explicitly treat the question of *how* and *where* knowledge is shared and developed. However, the physical place is either taken for granted, undervalued or seen as interchangeable with virtual and emotional spaces. Facilitating for physical proximity during task performance is only rarely investigated in an intra-organizational setting.

Furthermore there has been a focus, both theoretically and empirically, on organizations labelled *knowledge intensive firms* (Alvesson, 1993). This is framed by the emergence of the *knowledge society* (Castells, 2000), *knowledge work* and *knowledge workers* (Newell et al., 2002), and the need to label the growing number of semi-professional firms like ICT-companies, media-companies, consultancy companies etc. (Alvesson, 1993). Characteristics of such firms are: flatter structures, high degree of worker autonomy, intellectual work, knowledge as both input and output etc. A salient question is whether the same theoretical frameworks can be used to study organizations that are centralized and procedure-based with individuals with varying degrees of autonomy, such as this study does. Knowledge and learning is of great importance to most organizations, also to organizations that are not labelled knowledge intensive, for instance to more hierarchical and bureaucratic companies, in both the private and public sectors (Styhre, Josephson, & Knauseder, 2006). These more traditional organizations have received less attention on the research arena for studies on learning and knowledge creation in practice. This study contributes to shedding light on organizations in this category.

The above is an introduction to a study of opportunities for learning and knowledge creation in organizations. The need for more knowledge on where and how learning and knowledge creation take place in complex organizations where both theoretical knowledge and practical skills are necessary and valuable, forms the background for a detailed presentation of the research questions in the next chapter.

1.1 Research question with sub-questions

The primary objective of this study is to explore where and how learning and knowledge creation take place within a hospital. *Where* points to both "in

what context" as well as to physical place. *How* points to "under what conditions". This is a case study of one specific kind of organization; a hospital, where the phenomenon will be studied in departments and wards. The study will also focus on similarities and differences between these units when it comes to learning and knowledge creation.

The focus of this dissertation is to study how learning and knowledge creation take place during work which includes visualization and acquirement of tacit knowledge. These processes are difficult to study since they are embedded in practice and often take place without intention, and even without conscious and aware participation. As a consequence it is necessary to study work itself in order to study how and where learning and knowledge creation take place.

The main research question is:

Where and how does learning and knowledge creation take place in different units in a hospital?

Since this research question is on a general level, it needs to be followed by sub-questions. These sub-questions have to do with the fact that learning and knowledge creation in organizations have both a formal and organized dimension as well as a dimension that is embedded in the work context (Styhre et al., 2006). The first sub-question aims to give a description of how the formal strategy for knowledge management is framed in this organization, whereas the second sub-question has to do with the workplace aspect of learning and knowledge creation and also focuses on how it may vary between the units under study. The third sub-question pursues the focus on workplace learning, and particularly elaborates on the "how", in asking what conditions obstruct learning and knowledge creation within these different units. A detailed account of the sub-research questions follows.

Learning and knowledge creation can be studied through the formal strategy for learning and knowledge creation in an organization, and, even if an explicit strategy does not exist, through measures taken to enhance learning. The first sub-question is therefore concerned with the strategy for knowledge management in a hospital:

i) What characterizes the strategy for knowledge management in a hospital?

The purpose of this sub-question is to answer the "where and how" in connection with the planned learning and knowledge creation in organizations, and aims to paint the strategic backdrop for the organization.

Due to the characteristics of knowledge, many researchers will claim that learning and knowledge creation cannot be managed, since the idea of management is based on rationality and the processes of learning and knowledge creation thrive under free and non-restricted conditions (Thompson, 2005). In addition to this general paradox there are also additional paradoxes in managing knowledge in an organization like the one under study: a traditional, hierarchical and bureaucratic organization, which makes it particularly interesting to describe how the management approaches this challenge.

Following the assumption that there might be a deviation between the formal strategy and the actual strategy-in-use, the next sub question points to how learning and knowledge creation actually take place in the work-context itself. The intention is to single out the opportunities for learning and knowledge creation and describe and categorize them. This will be a study of places for interaction, how work is divided, how cooperation is organized, and how people interact during the work day. The second sub-question is:

ii) Where are the opportunities for learning and knowledge creation in a hospital and how do they differ between different units?

This study will include a literary approach to *where*, as formulated in sub-question number two, and focus on the actual place where learning and knowledge creation take place. There has been a tendency to ignore the physical setting in studies of work and organizations (Yanow, 2006:1751). The above research question brings the importance of space into focus and attempts to link work and space in the meaning of opportunity for interaction with learning and knowledge creation, and thereby fill a gap in the present frameworks where it is often taken for granted. The notion of place is on the other hand, not limited to the physical place, and the study will also focus on how the place emerges through interaction and cooperation.

When opportunities for learning and knowledge creation are mapped through sub-question two, the identification of conditions that obstruct these opportunities will be studied. This is the focus of the third sub-question:

iii) In what way are the opportunities for learning and knowledge creation obstructed in the different units of a hospital?

This last sub-question is partly based on an assumption from previous research that there are barriers to learning and knowledge creation in organizations on different levels, and partly on the data itself since in the study of learning and knowledge creation in this organization, barriers as a phenomenon to the same emerged as salient in the study at hand.

The two last sub-questions tie to the first question about strategy for knowledge management in that it embraces the diversity of the organization with the intention of studying similarities and differences between different departments and wards. The choice of organization under study deviates from the present trend of studying heterogeneous so-called "knowledge intensive firms", since it is compounded by very different units, from support staff units to wards. This study builds on an assumption that diverse and heterogeneous organizations represent a challenge for the management of knowledge.

In the "classical" knowledge intensive firm, the employees will be a relatively homogenous group, with similar educational background, educational level and level of knowledge intensity in their tasks. How the employees in the different sub-systems view and value the learning and knowledge creation processes may, however, vary (Thompson, Warhurst, & Callaghan, 2001). This may indicate that different units within an organization make use of, or are dependent on, different factors for facilitating the knowledge processes. This study has been designed in order to make such a comparison possible.

The main research question with its sub-questions will sum up this chapter:

Where and how does learning and knowledge creation take place in different units in a hospital?

Sub-questions:

i) What characterizes the strategy for knowledge management in a hospital?

ii) Where are the opportunities for learning and knowledge creation in a hospital and how do they differ between different units?

iii) In what way are the opportunities for learning and knowledge creation obstructed in the different units of a hospital?

All the sub-questions point towards the main theme of the study, which is the curiosity to learn more about where and how learning and knowledge creation takes place in organizations. These research questions form a frame and provide the terms for the structure of the dissertation. The structure is described in the following chapter.

1.2 Structure of the dissertation

The dissertation is stringent in the way that it starts with an outline of the research questions, continues with a review on theory and empirical analysis,

leading the way to the conclusions. The key content of the dissertation is a direct and indirect follow up of the research questions.

Following the introduction of the dissertation and the research questions in particular; the theoretical approaches considered are presented in chapters two and three. Since the study is explorative, I have continuously and in all phases of the research project, considered the choice of theoretical framework; before, during and after data collection, analysis and discussion. In spite of the fact that different theoretical aspects have entered at various points in time, I have decided to assemble all the aspects of theory in this chapter.

In the first of the two chapters on theory, the aim is to give a general overview of the fragmented field of knowledge and organizational learning, and account for concepts like dimensions of knowledge, knowledge intensity and knowledge management strategy. In the following chapter, chapter three, the objective has been to map the phenomenon under study theoretically in order to get a picture of how it is conceptualized and how it is focused in empirical studies. The focus is on where learning and knowledge creation takes place and on what influences where and how it happens, and not so much on the outcome of learning or on the actual processes of learning and knowledge creation themselves.

Chapter four is an account of the research methods utilized. The methodological approach is, similar to the theoretical approach, drawn from multiple sources and methodological approaches. It is a challenge to create a research strategy for studying learning and knowledge creation during work, since these are processes that are embedded in practice and people will not always be aware of them. My approach has been to keep close to the data and the context. At the same time it has been necessary to reduce and categorize. Combining the two is a challenge that is up for discussion in this chapter, along with the problem of categorizing the case as part of a theoretical selection.

Chapter five is an introduction of the case in general, which is Bell Hospital in Norway, and the four units under study. This chapter is an introduction to chapter six, which contains an in depth presentation and analysis of the units under study.

Chapter six is by far the most extensive chapter and signalizes the emphasis on rich data and thick descriptions in order give an account of the study in its many facets. In this chapter data from interviews, observation and document studies are analyzed. The chapter starts with an account of the strategy for knowledge management – the way the management presents it, before diving

into each of the units under study. Data from the informants on how their workday elapses is accounted for and interpreted, with focus on opportunities for learning and knowledge creation. The different sub chapters largely follow the same structure in a thematic presentation along the lines of the research questions.

In chapter seven, the findings and answers pertaining to the research question are discussed in light of theory. This discussion constitutes the basis for presenting the contributions in the same chapter. Suggestions for further research are made by way of presenting proposals in chapter eight. The last chapter of the dissertation touches on strengths and weaknesses.

2 The study of knowledge and learning in organizations

The purpose of the chapter is to provide a theoretical background for the study and to contribute to the rationale for the research questions, in particular to what the opportunities for learning and knowledge creation under study are opportunities *for*.

Since the study is explorative, I have continuously and in all phases of the research project conducted studies of theory; before as well as during and after data collection, analysis and discussion. In spite of the fact that different theoretical aspects have entered at various points in time, I have decided to assemble all the aspects of theory up front in chapters two and three, although this will be partly deceptive as to the actual process of the study.

"As far as the learning organization, one has to take care of each day and each moment in order to learn."
(Department manager in Bell Hospital)

As the quote above indicates, the notion of the learning organization has long since reached practice. Through contributions like Senge's "The Fifth Discipline (1990) and Nonaka and Takeuchi's "The Knowledge Creating Company" (Nonaka & Takeuchi, 1995), the concepts of learning in organizations or the learning organization has become common property with managers and employees in general. It is however a vast discipline with blurred borders to neighbouring disciplines, and in this dissertation there could have been a number of paths to follow in order to investigate organizational learning.

The theoretical field is still immature and has not yet found its final shape and unified content, and the state of the field is similar to what Kuhn (1970) describes as the pre-paradigm stage. There are still concepts with ambiguous meaning in this theoretical field-in-progress. This leaves me with a theoretical platform where several theoretical angles and facts that seem equally relevant, which is one of the characteristics of the pre-paradigm stage (Kuhn, 1970; Olaisen, 1991).

During the last two to three decades knowledge and learning in organizations as a field has seen a rapid development and publications have flourished. This is due to the current interest in knowledge as the source of competitive advantage and improved performance, and to learning as a process of

developing knowledge. Even though the field has grown a lot recently, its building blocks are to be found further back, with Dewey (Elkjær, 2003), Hayek (1945), Cyert and March (Easterby-Smith & Lyles, 2003), and Polanyi (1966). The early contribution by Cyert and March from 1963 is considered to be on of the first on organizational learning (see chapter 2.4). Knowledge management, however, is a concept of a later date, in fact it is suggested that this concept was helped along by Nonaka's works from the mid 90'ties (Easterby-Smith & Lyles, 2003). Knowledge management is often associated with knowledge as a strategic issue and as a resource, with links to the resource-based view (Barney, 1991; Scarbrough & Swan, 2003).

Roughly, we can say that the study of knowledge and learning in organizations has developed in two main-streams within the organizational field (Newell et al., 2002). One, represented by the development of the Intellectual Capital concept, is tied to Information and Communication Technology. The other is based on social interaction and is occupied with dimensions of knowledge that are not easily codified. Newell et al. (2002) call this the community approach. The two streams differ in their assumptions of the characteristics of knowledge and on how knowledge is assumed to be shared and developed (Newell et al., 2002; Nonaka, 1994). Newell et al.'s community approach is also called the Practice Based Approach (Nicolini, Gherardi, & Yanow, 2003). From this approach, learning and knowledge creation are seen as social and cultural phenomena. This has at least two implications; learning is not viewed solely as an individual cognitive activity (Contu & Willmott, 2003) – rather it is also situated, social and the context is seen to influence how learning takes place. These above mentioned theoretical approaches are often classified within the social constructivist paradigm.

The study of knowledge and learning in organizations is closely tied to the context of the study and what kind of organization that is under study. Much attention in both the theoretical and empirical field on learning and knowledge in organizations has been on the so-called *knowledge intensive organizations* (Alvesson, 2004). This lopsided attention in research on knowledge intensive organizations is a motivation in itself for studying an organization like a hospital, as the case in the present study. A hospital is dominated by practical work and has a heterogeneous staff, with large variation in educational background and so-called knowledge intensive tasks. Defining a knowledge intensive organization and questioning whether a hospital can be categorized as one will be discussed in chapter 2.2, which is relevant to the subsequent discussion in chapter 7. Some of the features of the organization under study have been decisive for choosing a hospital as case, but the study is not seen as a specific contribution to the field of healthcare. Further, the aim is to study learning and knowledge creation in

the work context, including also the unintentional and unsystematic learning (Huber, 1991), which eliminates the direction of education, training and supervision in practice in hospitals (Heggen, 1995; Hem, 2008). Rather I will search for theoretical contributions with focus on 'place for learning and knowledge creation' during work and 'obstructions' to the same.

In order to study the opportunities for learning and knowledge creation, the understanding of the learning processes is crucial. Although the learning process itself is not under study per se it is necessary to dive into the concepts of knowledge and learning, since the way these concepts are understood, forms the rationale for asking these particular research questions.

In the dissertation at hand, learning and knowledge creation in practice is under study. Practice is a concept that needs further clarification, since it is both an everyday word with several common meanings and a theoretical concept also with multiple meanings. In common usage the verb practice has two major meanings: to practice for instance an instrument or to practice a profession (Cook & Brown, 1999). The noun *practice* likewise has two major usages, namely a practice as in a medical practice, and a practice as distinguished from theory. Several authors distinguish between praxis and practices, where practice and praxis (in singular form) are used interchangeably (Jarzabkowski, Balogun, & Seidl, 2007; Johnson, Langley, Melin, & Whittington, 2007; Reckwitz, 2002). Practice is seen as what people actually do, while practices (plural) are defined as "a rutinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (Reckwitz, 2002:249).

For the purpose of this study and in order not too make it unnecessarily complicated, I will lean on Cook and Brown's working definition. "the coordinated activities of individuals and groups in doing their 'real work' as it is informed by a particular organizational or group context" (1999:387). Cook and Brown also refer to a practice as "action informed by meaning drawn from a particular group context" (1999:387). Even if this definition narrows it down, a need emerges to define "real work". This is particularly relevant in the hospital context where opportunities for learning will have very different potentials for example in the hallway or during breaks (is that 'real work'?) as opposed to for example in contact with the patient. This is due to questions of dimensions of knowledge (for example tacit and explicit) and ways of learning (for example learning as cognitive individual activity or learning as situated and interactive), which will be discussed below.

The rest of the chapter is organized as follows: First I explore the concept of knowledge in organizations as a strategic issue and the knowledge intensive organization. The first sub research question is on characteristics of the strategy for knowledge management, which will form a back cloth for the analysis, and is explored theoretically here. I further move on to explore the concepts of knowledge and of learning in organizations, since the opportunities for learning and knowledge creation are under study. Since the aim is to study how these opportunities emerge where people work, there will be a special focus on situated learning, which locates learning to everyday practices (Contu & Willmott, 2003; Lave & Wenger, 1991). The situated learning perspective is used to understand what goes on in practice – relevant to the research issue.

2.1 Knowledge and learning – a strategic issue?

Hard core fields like strategy and business have been drawn to the increasing importance of knowledge and the decreasing importance, relatively speaking, of tangible resources. Managers and researchers alike have had no choice but to pay more attention to knowledge and how or if it can be managed (Uhlin, 2004). So although the *importance* of knowledge and the *concept* of knowledge is as old as Aristotle, the great attention paid to knowledge in the field of organization studies (being a young field in itself, by comparison), is of a later date. Knowledge and learning are now included in all parts of the field, from viewing organizations from a knowledge perspective to including knowledge as an important resource and process in classical economic and organizational theories. Porter, for example now includes knowledge and learning in his frameworks for strategic analysis (Porter & Teisberg, 2006), and Kaplan and Norton have included knowledge and learning in their Balanced Scorecard tool (Kaplan & Norton, 2001, 2004). Within the field of knowledge management, however, knowledge is often regarded as problematic, as stated by Spender and Scherer (2007) in the following quote:

> "One of its paradoxes is that KM is only separable from existing disciplines such as microeconomics and organization theory when it treats knowledge itself as problematic. It gets its traction from admitting we do not know what knowledge is, so demanding we think about the ways managers and organizations respond to these doubts." (Spender & Scherer, 2007:8)

This dissertation explores opportunities for learning and knowledge creation, and this can be viewed as closely connected to strategy for knowledge management since this strategy is intended to provide the premises for

learning and knowledge creation in the organization. Part of the motivation for studying Bell Hospital was that they call themselves a learning organization. They do not have a written knowledge management (KM) strategy, as strategy for knowledge management "can be either explicitly declared by top management or implicitly implied by their actions regarding the allocations of resources and the establishment of different customs, goals, procedures, and incentive systems" (Bierly & Chakrabarti, 1996:124). Although not all companies have an explicit strategy for knowledge management, as in 'explicitly declared by the management', all companies have a strategy for knowledge management in-use that is 'implicitly implied by their actions'. The nature of this strategy will, among other factors, be formed by the management's view on knowledge and learning, other internal cultural and structural issues, as well as by external factors.

The strategy will be identified through what the management says and what they say that they do, while the strategy-in-use will be identified through studying work in the organization. The question of strategic choice when it comes to strategy for knowledge management is reliant on the view on knowledge and learning, and I will make use of Hansen, Nohria and Tierny's (1999) framework for knowledge management strategy. This framework proposes two different generic strategies: a personalization strategy and a codification strategy. In the personalization strategy, interaction is key, whereas the codification strategy relies on classifying and storing knowledge in information technological remedies for retrieval by others and at other points in time. The underlying assumptions about knowledge in a personalization strategy are that it has specific characteristics, for instance, a tacit dimension that needs face-to-face interaction and collective reflection in order to be transferred and in order for peers to benefit from experience already gained. In a codification strategy, on the other hand, knowledge is seen as classifiable, codifiable and separable from people. The choice of strategy depends on the nature of the products or tasks: whether they are standardized or customized, whether the product or service is mature or innovative, and lastly whether reliant on tacit or codified knowledge (Hansen et al., 1999).

Hansen et al.'s (1999) framework for knowledge management demonstrates those features in the organization that can be considered in outlining the strategy for knowledge management. However, if we start picking at the elements it seems like an oversimplification to say that we can actually choose between these two strategies. Standardized or customized tasks and products will for instance only be standardized or customized for a limited time due to the rapid change in the knowledge society. Whether or not the product is mature or innovative is likewise hard to determine, since change must be regarded as a continuous activity (Meyer & Stensaker, 2006).

Further; even though Hansen et al. describe through case presentations how the strategies can be implemented, they concentrate on the deliberate and planned learning and knowledge creation situations, and there is little focus on facilitating unintentional and unsystematic learning processes (Huber, 1991). The lack of focus on seeing strategy as part of the micro-activities and as action has been met by a stream of literatures under the label 'Strategy as practice', which has unfolded during the last two decades (Jarzabkowski et al., 2007; Johnson et al., 2007; Whittington, 2006). In the strategy as practice perspective, attention is paid to what managers actually do with basis in everyday reality (Johnson et al., 2007). In this perspective the aspects of external influence is included, and this is, relevant for the study at hand.

External influence manifests itself in the case under study in particular through a reform wave within the public sector, New Public Management (NPM). NPM has been a source of influence during the eighties, nineties; and it is still alive and present in this decade. The concept of NPM has its roots in the UK, where it emerged in the Thatcher era as a label for reforms that aimed to increase cost efficiency and increase the use of economic incentives (Grund, 2006). NPM has two major features, the economic column and the managerial column (Klausen, 2005). Both of these columns base their arguments on private sector theories, and there is an assumption that there is no major difference between public and private sectors. This means that assumptions in the private sector, like the existence of a market, rational decision-making and access to full information have been adopted by the public sector. The economic column implies market orientation and will use means like privatization, outsourcing, organization in profit centres, performance linked pay, customization etc. (Klausen, 2005). The managerial column makes use of tools like Service Management, Total Quality Management, Business Process Reengineering, and focuses on managing by objectives and performance measures (Klausen, 2005). This latter often translates into new ways of organizing, new ways of designing the physical space and of the introduction of balanced score card systems for measurement and control.

The comprehension of knowledge in NPM is subtle and finds its expressions in the implementation of the reform and through the tools used, for instance the balanced score card and the customer surveys. These tools are based on quantitative indicators where it is possible to identify the connection between cause and effect over a limited time period. This means an emphasis on coding, emphasis on short term and measurable results and on causal connections, and these assumptions in the NPM reform influence the strategy for knowledge management since the tools and the measurements

themselves influence the perception of the way the employees work and hence how they learn.

In this chapter 'knowledge as a strategic issue' has been in focus. This is relevant for the study since the first research question is on the characteristics of the strategy for knowledge management, and the characteristics will be mapped. In reviewing the literature on learning and knowledge creation, the question of whether the public hospital under study can be characterized as a knowledge intensive organization becomes importunate, since many of both conceptual and empirical contributions from the field concern organizations in this category. This is discussed in the following.

2.2 Knowledge intensive organizations

Knowledge intensity is a frequently used concept within the research on learning and knowledge creation, especially in descriptions of organizations. Since the greater part of research on learning and knowledge creation is performed on so-called knowledge intensive organizations, it is relevant to look into what a knowledge intensive organization is. It is particularly interesting in this study, which is designed with very different units, to also bring in the question of variation in knowledge intensity between different units within the same organization.

In knowledge intensive organizations knowledge represents the most important production factor or resource, as well as the output (Boland & Tenkasi, 1995; Løwendahl, 1997; Newell et al., 2002; Sveiby, 1990). The category of knowledge intensive firms includes organizations primarily concerned with the application of specialist knowledge to the creation of customized solutions to clients' needs (Empson, 2001:814). According to Lien and Nesheim (1998), the characteristics of knowledge intensive companies are as follows: Knowledge is of vital importance in building the companies' competitive advantage, their main objective is knowledge production, the main products are services and tailored solutions, and the level of interaction with the customer is high. For customers of knowledge intensive businesses it is difficult to consider the product objectively because these companies make a living out of knowing more than their customers. Knowledge is closely tied to the employees ("the most important resource have shoes on their feet and leave the office around five o'clock every day" (Nordstrøm & Ridderstråle, 1999:34)), and the knowledge itself is often theoretical and abstract.

Organizations outside this format are also knowledge intensive, but do for instance also have a dominating element of practical work. Therefore, when

a criteria for knowledge-intensive work according to Alvesson is that "The basis for the service in question is primarily in the minds of personnel in the knowledge-intensive company" (Alvesson, 1995), this might not be the case for all units in for instance a hospital. And as Alvesson (1993) argues, it can be difficult to decide who has the highest level of knowledge intensity since it is difficult to compare very different types of knowledge. Haugstad (1999) refers to a study by Bartlett and Ghoshal (1997) of the ISS, the Danish cleaning services corporation, where they show that even in such a seemingly "non-knowledge intensive" business, the main source of value creation is the employees' intimate knowledge of customer needs and identification of new ways of satisfying these needs (Haugstad, 1999). One of Josefson's (1991) informants in her study of knowledge forms in healthcare, has objections to the trend of structuring 'what we intuitively can understand', and she says: "The dilemma consists of, she thinks, that it is the scientific knowledge that counts" (Josefson, 1991:26, my translation).

The different "types" of knowledge and the differing status that these types have is particularly relevant to a hospital, due to the heterogeneity of the staff, and to the units in the present study. In the research question I ask about learning and knowledge creation in different units in a hospital. In the theoretical selection of the units, two units close to the core activities (wards) and two support units were selected.

An additionally interesting discussion is how the organization copes with different types of knowledge. I will start this discussion with an account of the characteristics of knowledge, which is the aim of the next chapter.

2.3 Characteristics of knowledge and knowledge as process

The aim for this chapter is to discuss characteristics of knowledge based on the assumption that the understanding of these characteristics will influence the strategy for KM, the organization of work and also the design of the physical layout.

In an attempt to outline a definition of knowledge, most researchers, even in business schools, go back to Aristotle's intellectual virtues including the three concepts for thinking and knowledge: techne, episteme, and phronesis (phronesis is also an ethical virtue) (Aristoteles, Rabbås, Stigen, & Eriksen, 1999; Eikeland, 2006). The three concepts are often used to define knowledge and, of them, only the two first, techne and episteme have become common as part of the scientific vocabulary and in the field of organization and knowledge management. Episteme points to scientific knowledge and techne can be compared to art or skill, whereas Aristotle's

concept of phronesis is usually translated as practical wisdom (Eikeland, 2006). In a study of how knowledge is shared and created, the concept of epistemology, defined as "The study of knowledge; how you know what you know"[1]; alternatively "The theory of knowledge, especially the critical study of its validity, methods and scope"[2], is filled with the wide scope of the Aristotelian frame of knowledge. Theoretical and often codified knowledge has a central position in the field of knowledge management. The more recent emphasis on the tacit dimension of knowledge or knowing, can be seen as a return to practice, and involves the ancient concepts of techne and phronesis, as the aim of phronesis is praxis or action (Eikeland, 2006). In the study at hand, work situations are studied where hands-on practical work is dominant, and where tacit knowledge can be made visible through action and interaction during task performance.

The majority of the literature on knowledge and organizational learning is engaged with categorizing and labelling different kinds or different aspects of knowledge. These categories include seeing knowledge as a process (Eisenhardt & Santos, 2002), as tacit (Nonaka, 1994; Polanyi, 1966), as soft (Hildreth & Kimble, 2002), as leaky and sticky (Brown & Duguid, 2001; Szulanski, 1996), as practical and theoretical (Grønhaug, 2002), and seeing knowledge as a product (Siggaard Jensen, 2002). Løwendahl et al. (2001) call for research that goes beyond categorizing knowledge. I would argue, however, that such categorization is adequate, since the way knowledge is viewed will have implications for how it is managed (Chia & Holt, 2008). Asserting that knowledge has various characteristics does not mean that we are dealing with different kinds of knowledge, but rather different aspects that might be due to situational and personal conditions.

Knowledge or knowing is frequently seen as having a tacit dimension (Johannessen, Olaisen, & Olsen, 1999; Nelson & Winter, 1982; Nonaka, 1994; Polanyi, 1966; Snehota, 1990). Tacit knowledge is highly personal, experienced, context-dependent and hard to formalize. It is "engrained in the analytical and conceptual understandings of individuals ('know what') and also embodied in their practical skills and expertise ('know how')" (Bate & Robert, 2002:648). This is knowledge that we often take for granted, and it is therefore hard to pass on to others (Nonaka, 1994). The emphasis on tacit knowledge can be seen as a revival of viewing knowledge as something that must manifest itself in action (Siggaard Jensen, 2002). Knowledge is not

[1] highered.mcgraw-hill.com/sites/0072549386/student_view0/chapter2/glossary.html
[2] © Clue International corporation

solely a cognitive process, but also a social process, which according to Siggaard Jensen can be seen as a more pragmatic concept of knowledge.

Explicit or codified knowledge, on the other hand, is often seen as the opposite of tacit (Nonaka, 1994), and transferable in a formal, systematic language and independent of context. Tsoukas (2005) uses codified knowledge and theoretical knowledge as synonyms. This dimension of knowledge can be articulated or written or copied down in some form, and knowledge in this form has come to play a dominating role. The interest in the concept of tacit knowledge can largely be seen as a reaction to this. The emphasis on ICT as a knowledge management tool, implies underlying assumptions on knowledge as 1) something that can actually be captured and stored in writing or in other graphic or symbolic forms (Styhre et al., 2006), and 2) through codification be transferred from one person and context to another person and context.

Critics of the concept of tacit knowledge and the use of tacit knowing assert that what tacit knowledge is remains tacit, and if defined, it is often defined as 'not-codified' (Cowan, David, & Foray, 2000). Some researchers will accept the label tacit knowledge, but will not accept the assertion that it can be turned into explicit knowledge, as very strongly claimed by Nonaka (Nonaka, 1994; Nonaka & Takeuchi, 1995). Polanyi is often considered to be the "father" of the concept tacit knowing, and quite a few researchers claim that Polanyi's contribution is misunderstood and more complicated than the popularized versions found in organizational learning literature (Gourlay, 2004; Tsoukas, 2005). Tacit knowledge or knowing should not be seen as the opposite of explicit knowledge, says Tsoukas (2005), rather as the other side of the same coin. It is further debated whether tacit knowledge or knowing should be defined as "hard to articulate" or whether this is all about not being conscious of the knowledge (or whether that might be the same?) (Cowan et al., 2000).

Nonaka and Takeuchi (1995) brought attention to an aspect of knowledge and of learning and knowledge creation through their *Theory of knowledge creation.* This framework remains an important contribution, even if Polanyi was misunderstood and misquoted. In this theory, commented in detail elsewhere in the dissertation, one of the core ideas is the process of conversion of tacit knowledge into explicit knowledge; called externalization. This is where the misunderstanding lies, according to Tsoukas (2004). In asserting that tacit knowledge becomes explicit through an externalization process, Nonaka and Takeuchi claim at the same time that tacit and explicit knowledge are similar and that the tacit knowledge when made explicit can be transferred (learned) by the same means as explicit knowledge can. The logical inference of Tsoukas' point is that a part of

knowledge is actually inherently tacit, and can only be transferred through socialization (observing and imitating). If Tsoukas is right (and right in his interpretation of Polanyi) this can be seen as an argument for facilitating interaction so that a situation of "observing and imitating" is created (or socialization, according to Nonaka and Takeuchi 1995). I will return to this discussion in the next chapter. When knowledge becomes visible in practice as a result of work or collective reflection, this will be connected to context and a result of "what questions are asked, how they are answered and how these answers are made to fit together" (Tsoukas & Mylonopoulos, 2004:S3).

Rolf (1991) on the other hand, claims that Polanyi's concept 'tacit' should be interpreted as 'implied', which is a more integrative approach to the two concepts. Polanyi had a clear notion of the strong connection between action and knowledge. His view on knowledge was relational and dynamic, hence the use of 'knowing', and he claimed that the concept of knowing covered both tacit and explicit knowledge. A study of opportunities for learning and knowledge creation with solely the tacit dimension in focus does not make sense for this very reason; firstly tacit and explicit dimensions of knowledge are interwoven, and secondly, even though tacit knowledge can be seen as having to manifest itself in action – this is also partly true for explicit knowledge, especially in a study of unintentional and unsystematic learning (Huber, 1991) and knowledge creation in organizations, like the present. Empirically it is difficult to divide the two aspects of knowledge, and what is more, explicit knowledge often also needs action in order to become visible. As Tsoukas and Mylonopoulos (2004) state "even the most 'theoretical' forms of knowledge essentially depend for their application on types of cognition and social skills that are inherently non-codifiable" (page 2). This indicates that we need a concept that covers knowledge on practice, whether it is tacit or explicit or both, but that has the feature of being transferred and developed during work.

Hildreth and Kimble (2002) introduce the terms soft and hard knowledge. Hard knowledge refers to the "codifiable" knowledge that can be managed with ICT tools and techniques. Soft knowledge is described as "less quantifiable and cannot be so easily captured and stored" (Hildreth & Kimble, 2002:8), and less structured. Defining a dimension of knowledge as *soft* is broader than just defining it as tacit, as soft knowledge *can be* tacit. Other examples of soft knowledge are internalized experience, skills, and cultural knowledge embedded in practice. Hildreth and Kimble also emphasize the social aspect of soft knowledge, which refers to knowledge as being socially constructed. This point to the necessity of understanding how knowledge is constructed and nurtured in an organizational context (Hildreth & Kimble, 2002). A further classification criss-crossing the tacit-explicit

discussion is the concept of occupational knowledge. Knowledge can be classified as occupational when "experiences have given it a content" (Josefson, 1991:27, my translation).

Viewing knowledge as a process, as socially constructed, and as multidimensional rather than simply as a resource (Eisenhardt & Santos, 2002; Tsoukas & Mylonopoulos, 2004) has been dominant in several of the contributions discussed here. "Knowledge is considered socially constructed and the creation of meaning occurs in ongoing social interactions grounded in working practices" (Eisenhardt & Santos, 2002:141). Several theorists insist on the concept knowing instead of knowledge (Blackler, 1995; Nicolini et al., 2003; Orlikowski, 2002; Polanyi, 1966), pointing to the dynamics of knowledge and the way it changes through use. Knowledge changes as it is "passed on" to others in a translation-like process (Gherardi & Nicolini, 2000), similar to the way a text will be slightly changed in a translation process, a change will also happen to knowledge as it is made visible and shared. I view knowledge as dynamic and as changing and developing in the process of interaction and collective reflection. I understand knowledge as a "process created and articulated in day-to-day interactions between individuals in the organizations", rather than "an organizational asset that can be used, exploited and traded" (Styhre, 2003:21). Further, the process perspective implies that knowledge changes in the process, which means that knowledge in use changes meaning and character in the transfer and translation in practice (Gherardi & Nicolini, 2000). In this transformation new knowledge may emerge.

To sum up: to say that the pair of tacit and explicit knowledge as a dichotomy is a simplification, since tacit knowledge, or knowing, also embraces the 'implied' (Rolf, 1991) or could be labelled soft (Hildreth & Kimble, 2002), since it includes explicit knowledge which is not necessarily possible or easy to articulate. This is very much on Schön's agenda when he claims: "Let us search, instead, for an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict" (Schön, 1983:49).

For the opportunities for learning and knowledge creation to emerge, we need not only to clarify the characteristics of knowledge which has been the agenda in this chapter. The focus in this study is not on the actual learning processes, nor on the content of the learning; still in the next chapter, I will review some of the relevant literature on learning and knowledge creation in organizations in order to paint the picture of what the potential opportunities are *for*.

2.4 Learning and knowledge creation in organizations

Learning is *the* buzz word in knowledge management and has been for a good while. As always, it is complicated when very common words with a multitude of different meanings are used theoretically. This is definitely the case with learning within knowledge management. In general, people, and as we shall see later this is also the case for my informants, connect learning to a school-like situation, which also means connecting it to an individual learning situation separate from the work place. The learning organization (LO) and Organizational learning (OL) are often used interchangeably. However, they belong to different streams of theorizing, where LO is a prescriptive stream, exemplified by Senge (1990), and OL is a descriptive stream (Vera & Crossan, 2003).

A study of learning and knowledge creation in organizations could have been approached in a number of ways. This chapter on learning and knowledge creation will hardly do the field justice since it is vast and many sided. Attempts to give general overviews of the field can for example be found in the following reviews: (Easterby-Smith, 1997; Easterby-Smith & Lyles, 2003; Nicolini & Meznar, 1995; Vera & Crossan, 2003). My focus will be on issues that seem relevant for this particular study, which is learning in action and interaction with emphasis on emergent learning, and not so much on the methodical and planned learning activities. Social learning theory and situated learning are indirectly connected to the research questions in that they are used to understand the learning that takes place in the organization. In chapter three I will be more specific on the issues directly connected to the research questions.

The organization under study has labelled itself a learning organization, and this label has grown out of a vast movement both within theory development and research on knowledge and learning in organizations. "Many researchers have emphasized three major factors for managing knowledge: enablers, processes, and organizational performance" (Lee & Choi, 2003:181). One of the recurrent debates has been whether organizational learning should be understood as individual/cognitive or as a social/cultural process (Easterby-Smith, Snell, & Gherardi, 1998). Cook and Yanow (1993) and Lave and Wenger (1991) emphasize the social/cultural as the learning process, but is criticized by Easterby-Smith et al. (1998) for not having paid enough attention to the power of formal structure.

The knowledge management direction connected to use of ICT, with emphasis on classifying knowledge is within the cognitive approach. An underlying assumption in this approach is that knowledge can be separated from person and context and transferred to other people in a codified form.

This study picks up at this end in asking questions about what level the learning takes place, and where it takes place. To see learning as a solely individual activity is misleading (Gherardi, Nicolini, & Odella, 1998), as learning happens at the individual level as well as on the collective level. In this study of opportunities for learning and knowledge creation focus is on how people learn while they work. Social learning theory has been used to explain how people learn at work, and "learning is regarded as ubiquitous and part of human activity as such" (Elkjær, 2003:43; Nicolini & Meznar, 1995). The approach in this study has therefore been to ask the informants to tell their story of what they do during the day with the specific intention of identifying opportunities for learning and knowledge creation in their account.

The question of how to measure the outcome of learning and knowledge creation in an organization; of 'what has actually been learned', is often posed when learning is seen as a way to improve organizational performance. Huber suggests that an organization learns if "the range of its potential behaviours changes" and if "any of its units acquires knowledge that it recognizes as potentially useful to the organization" (Huber, 1991:89). This can be labelled latent learning. Tolman (Svartdal & Flaten, 1998) claimed that learning is a cognitive activity and the result of what is actually learned can only be seen when the right motivation for action is present. In other words, what is actually learned is not observable until the right conditions are present. This suggests that learning involves changes in cognition (Easterby-Smith, Crossan, & Nicolini, 2000), and points to a large debate about "when has learning actually occurred", and is learning a cognitive or a behavioural change? The outcome of learning is beyond the scope of this study, but latent learning is not, since I consider the opportunity for learning to be also useful in matters that are not of urgent interest. This has to do with the time scope. When changes become part of the regular working day, it can be difficult to foresee and plan for learning, since it is difficult to know what you will need to learn.

The time that passes between the learning and the change in behaviour can however be substantial and the space can be wide. In addition, the possibility of tracing the causal relationship between the two, what has been learned and when the learning took place, is not straight forward since these are complex processes and work practice is not linear and simple to track. For the purpose of this study, I will lean on Huber's (1991) suggestions for knowledge learned since latent knowledge will form insight for yet further development of knowledge, *or* for a change in practice/action. Latent learning also builds redundancy and will facilitate the ability to recognize the value of new knowledge and information (Cohen & Levinthal, 1990). Redundancy means overlapping knowledge (Nonaka, 1994), and a high degree of knowledge

overlap will facilitate collective reflection, since a shared repertoire of common resources of language, style and routines are part of the learning process (Wenger, 1998).

An organization's ability to *handle* knowledge and information is not sufficient; its ability to create new knowledge is *the* essential competitive advantage for the company (Nonaka, 1994). Nonaka emphasizes that an organization should not only adjust to its surroundings (receive and process information and knowledge), but also create new knowledge within the organization. "The creation of new knowledge in an organization, however, is often the result of an open system transformation of that organization's communities of knowing as they question and revise routines and create new processes and relationships among themselves"(Boland & Tenkasi, 1995). This is not merely a question of communication, but of co-creation – taking communication one step forward to action. And this constitutes the difference between information exchange and knowledge creation – or (just) between information and knowledge (Bate & Robert, 2002).

Since it is difficult to differentiate between the *learning* and the *knowledge creation* in empirical studies, I will regard these processes as interlinked and very often as a continuum. They are analytically distinct, but usually appear simultaneously. However, the sharing and creation of knowledge may be triggered by different and perhaps contradictory factors (Weick & Westley, 1996). Learning and knowledge creation can be seen as parallel to the dichotomy of exploitation and exploration (of knowledge) suggested by March (1991). Exploitation and exploration can be seen as competing structures for organizations. Either the emphasis is on creating new knowledge (exploration) or it is on sharing and using the knowledge that already exists in the organization (exploitation) (Brown & Duguid, 2000; Huber, 1991; March, 1991; Weick & Westley, 1996).

The way Weick and Westley (1996) view organizational learning can help illustrate the relation between learning and knowledge creation and underscores that this is not a matter of either/or. Weick and Westley (1996) see organizational learning as an ongoing and implicit feature of the organizing process. They define learning as "repunctuating the continuous experience". This means that in the process of exploiting knowledge in the organization, the 'repunctuation' is mediated by the conditions that contradict organizing (see above). The repunctuation of the continuous experience will create learning moments, which can lead to exploration – that is creation of new knowledge. In order to facilitate learning, doubt and curiosity must be cultivated. This is in contrast to the notion of organizing. Affirming the oxymoron of organizational learning is to be stuck in the middle of order and disorder and in this position learning will take place.

Learning and knowledge creation is connected and can only be separated for analytical purposes (Gherardi & Nicolini, 2002). In this context, new knowledge does not only point to the great inventions. Most knowledge creation is incremental, takes a long time and includes long-lasting processes. New knowledge and competitive advantage is built with small steps every day, through work-related interaction. Nonaka (1994) has developed a framework for knowledge sharing and knowledge creation, and I will apply part of this framework in the identification of learning processes in the case under study. New knowledge is created through different modes of knowledge conversion. These modes form the basis for learning and knowledge creation that takes place in organizations, according to Nonaka, and the framework includes a description of these *places* called Ba. These *places* are in focus in this study and are discussed in detail in chapter 3.1.2. The modes of conversion are socialization, externalization, combination and internalization and they take place in different forms of interaction. The theory emphasizes the dynamic aspect of knowledge in an ever-evolving process. In order for the knowledge conversion and creation processes to take place in fields for interaction, certain conditions must be fulfilled to facilitate these processes (according to Nonaka these conditions are necessary). These conditions are: autonomy, creative chaos, redundancy, requisite variety, love, care, trust and commitment (Nonaka, Toyama, & Konno, 2000). These conditions energize the fields for interaction, which in turn gives energy and quality to the knowledge conversion processes (between the tacit and explicit dimensions of knowledge). In addition, these conditions stimulate each other. The conditions can be seen as facilitators, and one crucial question in knowledge management is how active the management should be in intervening in the knowledge processes through organizing for these conditions.

Figure 2-1 below illustrates the knowledge creation processes as a spiral between the epistemological dimensions (explicit and tacit) and between the ontological dimensions (from individual to inter-organizational).

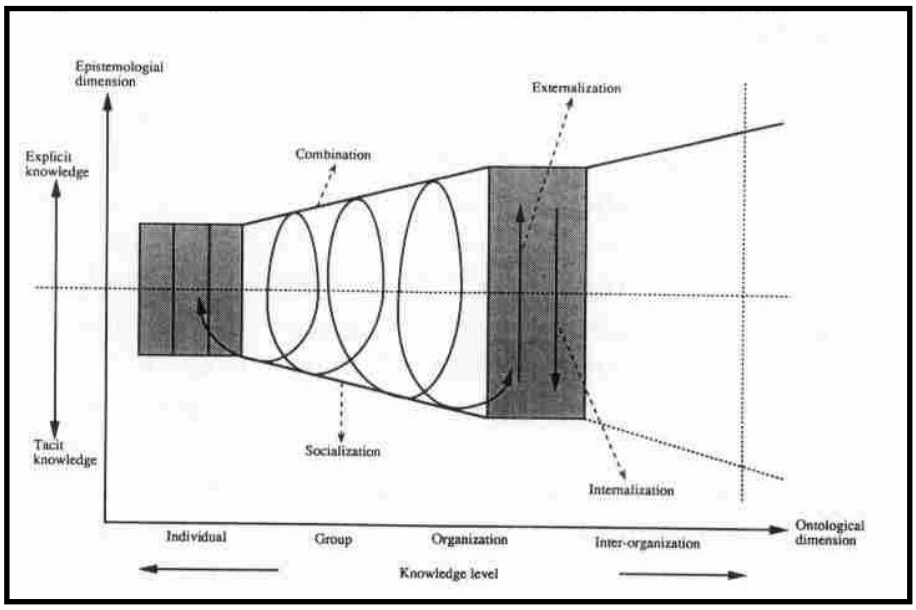

Figure 2-1: Spiral of Knowledge creation (Nonaka, 1994:20)

Nonaka (1994) asserted that his main contribution to the organizational learning field was to point out that to disperse the existing knowledge throughout the organization was insufficient in order to achieve competitive advantage; it was necessary to create new knowledge. The key to new knowledge was, according to Nonaka, the tacit dimension of knowledge. Nonaka's (1994) (and later Nonaka and Takeuchi 1995) theory is widely cited and referred to. It is also criticized; especially how tacit knowledge is perceived and described, and for omitting to discuss power issues and other organizational antagonism. Some of this criticism is accounted for in chapter 2.3.

Organizations live with the paradox of exploration and exploitation, and handling this paradox *is* knowledge management or the organization of learning itself. Part of the learning that takes place in organizations is informal and not organized, and in the research issue at hand opportunities for the learning and knowledge creation during work, formal – but mainly informal, is in focus. Situated learning theory sees learning and knowing as integral to the everyday activity in the workplace. In the following this theory will be briefly described, as it is part of the rational for studying opportunities for learning and knowledge creation.

Situated knowledge and learning

The situated learning perspective has its roots in social learning theory (Lave and Wenger 1991), and contrary to conventional cognitivist learning theories, the relational and structural aspects of learning and the dynamics of identity construction are emphasized (Elkjær, 2003; Handley, Clark, Fincham, & Sturdy, 2007; Kogut & Zander, 1996). The situated learning perspective holds, as the concept reveals, the situation as important for learning, and assumes therefore that practice is the main arena for learning. It further emphasizes the collective as the learning approach, although emphasis on the collective does not exclude individual learning; it is rather a both-and. However, the emphasis on the collective is a return to valuing the practice field as a learning arena and asserting a holistic view in that knowledge and people, or body and mind, are seen as joint rather than separated (Bateson, 1972).

Participation, identity and practice are core concepts of situated learning theory. Participation involves taking part, understanding and subscribing to norms, values and behaviours in the community. It is not interchangeable with the concept of opportunity for interaction used in this study and elaborated on in chapter 3.1 since it is covers a wider aspect of "being a part of" than focused on in this study. Through participation, individuals develop their identities and practices (Handley et al., 2007). Identity concerns understanding who we are and what potential we have which is also seen as part of the learning process. In the context of situated learning, practice is always social practice (Wenger, 1998), and learning takes place through participation in the way newcomers either imitate, adapt to, transform or reject what constitutes the practice (Lave & Wenger, 1991; Wenger, 2007). Situated learning theory suggests that "the opportunities to observe, adapt and experiment are dependent on the participatory opportunities available to the individual" (Handley et al., 2007:179), where the *participatory opportunities* refer to apprentices' move from peripheral to full forms of participation in a community (Handley et al., 2007; Wenger, 1998). The focus on this study is the participatory opportunities, however along the narrow lines of structural factors like physical layout and division of labour; which means studying the immediate context and background of interaction amongst individuals (Contu & Willmott, 2003). This embraces the old tradition of master-apprentice relationship and presupposes collocation for the purpose of observational learning (Bandura, 1977), or socializing and externalization (Nonaka, 1994) or passive monitoring (Kraut, Fussell, Brennan, & Siegel, 2002), which includes an arena for learning that exceeds individual learning from codified material.

The focus of this study is on the learning that happens at work. Critic of situated learning theory for considering all knowledge to be situated and contextual and fail to recognize that some knowledge is for instance not accessible at work and dismissing the idea of formal and external training (Rainbird, Fuller, & Munro, 2004a), may also apply to this study. There is however not a claim in this research that workplace learning is sufficient nor that it can substitute other forms of learning. It is rather a claim that learning during work has received scarce attention in practice.

Critics of situated learning further claim that there is a tendency to emphasize the consensual and participative nature of learning at work (Rainbird, Munro, & Holly, 2004b), and fails to focus on how this is built and on power issues. Power issues are not in focus in this study, although related issues like intent and (un)willingness to learn and to interact are of relevance for the issue in general and have emerged in the data material. The same can be said for identity construction, which is central in situated learning theory. As we shall see in the empirical analysis, identity perception appears as a barrier to learning, as found in a study of consultants by Handley et al. (Handley et al., 2007), but it is not focused in this study.

I close this chapter on knowledge and learning in organizations with a quote from the last chapter in Lave and Wenger's book from 1991. This chapter is called "Legitimate peripheral participation in Communities of Practice":
"In apprenticeship opportunities for learning are, more often than not, given structure by work practices instead of by strongly asymmetrical master-apprentice relations." (Lave & Wenger, 1991:30)

In this same chapter they write that a membership in a community of practice does not necessarily imply co-presence (page 98), and this sentence has partly triggered this study. And with this I conclude, before I go on to the next chapter which for one thing is about co-presence.

2.5 Concluding comments

This chapter has viewed the theoretical field of learning in organizations from a general point of view. I make use of the different entrances to theory presented here, in my approach to the empirical field. The study of the KM strategy as part of organizational learning is seeing learning as a means to achieve improved performance in a top-down perspective, while the study of what the employees actually do during work and where they have opportunities for learning and knowledge creation, is taking the actor's perspective as in situated learning. Although these two perspectives are distinct in their approach to learning, the situated learning

perspective contributes to increase the understanding of what is going on in this organization. This chapter also serves as a backdrop for the more focused theoretical account in the following chapter, where I will investigate the phenomena which are explicitly stated in the main research questions and sub-questions.

3 Where do people learn at work?

This study is constructed within the frames of organizational learning. The relevance of organizational learning theory was outlined in the previous chapter and provides a rationale for explaining the purpose of studying *the opportunities* for learning and knowledge creation, and forms a backdrop for this study: the question of where and how learning takes place during work. In this chapter the focus will be on what these opportunities for learning and knowledge creation are and where and how they emerge, with emphasis on the physical place and how they are influenced by how work is organized. In the empirical investigation the obstructions to learning and knowledge creation appeared as protuberant findings, and barriers will be discussed in this chapter. In this same chapter the theoretical investigation is followed by an account of how the themes posed in this study have been focused in previous empirical studies, in general and more specifically within healthcare and hospitals, which is the case under study here.

Learning during work, or workplace learning, has a flavour of both learning by doing as well as a master-apprentice connotation. Several theoretical approaches engaged with learning during work and task performance, for instance activity theory (Engeström, 1987), a cultural perspective on learning in organizations (Yanow, 2000), social learning theory (Bandura, 1977; Lave & Wenger, 1991), the community of practice framework (Wenger, 1998), and an actor-network perspective (Nicolini et al., 2003), emphasize the necessity of creating shared contexts. Interaction and collective reflection are seen as a necessary context for learning and creating knowledge, especially when tacit knowledge is involved (Handley et al., 2006; Nonaka & Takeuchi, 1995; von Krogh, Ichijo, & Nonaka, 2000). However, as we shall see in the following, theoretical approaches often lack focus on place and on how these shared contexts emerge, that is to say where and how the opportunities for learning and knowledge creation during work appear – as in the opportunity for seeing each other in action.

3.1 Opportunities for learning and knowledge creation

Opportunities for learning and knowledge creation in the work context arise constantly, and the particular focus here is when they emerge in interaction with colleagues. In this chapter I will investigate different aspects of opportunities for learning and knowledge creation: What are they, how do they emerge, and where are they?

The practical opportunity to learn and create knowledge in interaction with colleagues, vertically and horizontally, in an organizational setting is described only indirectly in the theoretical frameworks. Although the issue is raised and there are normative voices on the subject, like Boland and Tenkasi: "This means that the community must, of necessity, have a space for conversation and action isolated from the larger organization"(Boland & Tenkasi, 1995), little attention is paid to how or whether these opportunities are facilitated. The interaction that takes place in a shared context can be both formal and informal; it can emerge coincidentally or in planned settings within the formal structure, like for example during a regular meeting in the department, or in events intended for learning and knowledge creation.

Moran and Ghoshal list three conditions for exchange and combination in their account of "The creation of intellectual capital" (Nahapiet & Ghoshal, 1998). The first condition is that "the opportunity exists to make the combination or exchange" (Nahapiet & Ghoshal, 1998:249). They define this as access to "the objectified and collective social knowledge". In this account they very rapidly turn to discuss the information-technological improvements for enhancing the combination and exchange of knowledge as a step on the way to developing knowledge. This way they fall into the line of researchers with focus on ICT when it comes to learning and knowledge creation. However, they do add: "In addition, however, as the history of science demonstrates, the creation of new intellectual capital also may occur through accidental rather that planned combinations and exchanges, reflecting emergent patterns of accessibility to knowledge and knowledge processes"(Nahapiet & Ghoshal, 1998:249).

The question is further whether this interaction includes an explicit collective reflection in a social context? According to Nonaka, the continuous dialogue is a necessary condition for knowledge creation (Nonaka 1994), and for practitioners, "knowledge is inherently and necessarily connected with the situation the practitioner is in and often comes from explicit reflection on surprises that give hints about the practitioner's tacit assumptions" (Bartunek, Trullen, Bonet, & Sauquet, 2003:63). However, for interaction to be an opportunity for learning and knowledge creation, a chance to observe peers and colleagues in the midst of action is an opportunity for learning and knowledge creation in itself. As discussed in the previous chapter the process of socializing is one of four learning process in Nonaka's framework, and well known both from the master-apprentice model and pedagogical theory. Nonaka will claim that externalization, where tacit knowledge is made explicit, is when new knowledge is created and this is what Bartunek et al. above label explicit reflection.

The following will be a discussion of different categories of interactions. Interactions can be classified in different ways, formal vs. informal interaction, face-to-face vs. virtual, emergent vs. planned, horizontal vs. vertical.

Formal vs. informal is a common way to categorize interactions both in and out of an organizational setting. This categorization is however problematic since it is complicated to give a good definition of what is formal and what is informal, and this is further complicated by informal activity going on in formal interactions and visa versa. Some interactions have both a formal and an informal side to them. Marsick and Volpe define informal learning as "Informal learning occurs as the result of individuals making sense of experiences they encounter during their daily work lives" (Marsick and Volpe (1999) in Ouweneel, Taris, van Zolingen, & Schreurs, 2009:29). According to this definition, the focus of this study is on informal learning, and this typology is therefore not sufficiently fine-grained to be used in this study, and the issue needs further exploration.

Face-to-face vs. virtual interaction is of great current interest, due to use of ICT, extensive use of remote work, and due to globalization in general. Face-to-face vs. virtual interaction is a simplification and a continuum rather than a dichotomy. There are many degrees of "operational proximity" (Tagliaventi & Mattarelli, 2006) between the two, but the difference between "seing each other or not" while working is a main shift that applies to this study. This is relevant in this study due to two factors: 1) In general, learning through watching your peers or other colleagues is key in a situated learning perspective where knowledge is viewed as embedded and partly tacit, and face to face contact is a central issue. 2) In particular, since the organization under study is a hospital which is a "business" with a high degree of semiskilled work and where the units under study are all practical, operative units. Verbal interaction (talk) is however not reserved for situations with elements of tacit knowledge or practical work. Studies on knowledge intensive environments show that verbal and symbolic interaction is a necessary continuously and as a parallel to codified communication in order to paint 'the whole picture', and the claim is that "the learning organization is always already a talking organization" (Styhre et al., 2006:90).

Emergent vs. planned interaction touches on the field of knowledge management and how it has basis in managing knowledge top-down, as opposed to organizational learning (for discussion, see chapter 2.4) and the question of whether knowledge can be managed (Brown & Duguid, 2000). This study includes a study of the strategy for knowledge management, and a strategy most commonly is underpinned by the assumption that activity in organizations can be planned and managed (Mintzberg & Waters, 1985).

From this follows an assumption that activities for learning and knowledge creation can be planned, and seems to contradict the notion of knowledge and learning as emergent.

Facilitating, constructing and managing interaction and cooperation, as opposed to seeing interaction as an emergent organizational feature, is a central question of how to manage knowledge during work. It is a question of whether intervention will hurt and obstruct the knowledge processes, rather than facilitate them (Thompson, 2005). This is relevant to how for example the phenomenon of CoP has been developed by Wenger from a description of CoPs as an emergent phenomenon towards a well developed knowledge management tool (Wenger, McDermott, & Snyder, 2002). Although CoPs are seen as emergent, an increasing number of contributions suggest that they can, to a certain extent, be facilitated or even created (Newell et al., 2002; Thompson, 2005; Wenger et al., 2002).

Interference can have a "chilling effect" on creativity since creativity is driven by tacit knowledge and spontaneity (Brown & Duguid, 2000). The level of managerial interference is not only a question of too much or too little, but also of interference that actually creates barriers to learning and knowledge creation. In their comment on Orr's (1996) famous study of copy machine technicians, Brown and Duguid state: "In essence, Orr shows that in order to do their job the reps must – and do – learn to make better sense of the machines they work with than their employer either expects or allows" (Brown & Duguid, 1991b:43). This refers to the detailed manuals that are supplied for the technicians. All the solutions are codified, and the manuals are considered to cover all possible problems that the technicians will encounter. The social interaction that the technicians need in order to solve the problems that the handbooks do not address, is not a part of the knowledge management strategy.

Hanks states in a foreword to Lave and Wenger's book on situated learning (Lave & Wenger, 1991) that "Lave and Wenger do not reject the notion that participation frameworks are structured – it is precisely this that provides the conditions for legitimate peripheral participation – nor do they deny that expert performance is systematic. The hard question is what kind of system, and what kind of structure?" (Hanks, 1991:17).

If a community consist of members that participate by choice because they have something to contribute, it will seem hard to manage (Lampel & Bhalla, 2004) and attempts to manage it will risk killing the knowledge processes and the community itself (Brown & Duguid, 2000; Thompson, 2005).

Horizontally vs. Vertically: The communities described in the literature on learning in organizations are generally horizontal interactions or communities, made up of members with similar occupations and/or positions, for example the studies of apprenticeships mentioned by Lave and Wenger (1991). Another illustrating example is Orr's photocopy machine technicians (Orr, 1996), also used as a case by Brown and Duguid (Brown & Duguid, 1991a; 2001).

Communities of practice (Wenger, 1998) and occupational communities (van Maanen & Barley, 1984) are horizontally shaped interactions. Communities of practice (CoP) are defined in the following way by Wenger: "Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger, 2007). A community of practice is a group of employees all involved in a shared practice (Lave & Wenger, 1991). Even though these communities can be formal or informal (Brown & Duguid, 2001; Wenger & Snyder, 2000), the "natural", "self-selected", and "non-interfered-by-management group" vision of a CoP has become dominant (Thompson, 2005). One of the ways of facilitating creation of CoPs is through providing structures. Thompson (2005) divides structure into seeding structures and controlling structures. Seeding structures aim to use "structure in a non-prescriptive way in the hope of indirectly seeding future collaboration" (Thompson, 2005:162). This is opposed to directly controlling present collaboration through controlling structures, which can be done through introducing best practice and consultants. Controlling structures are, according to Thompson, likely to fail because they "impose structural constraints on an emergent social dynamic" (Thompson, 2005:163). "They cannot be created by, for example, simply drawing them into an organization chart; people must also identify with, and thus feel motivated to contribute…" (Thompson, 2005:151).

Communities of practice have been criticised for exaggerating the harmony within the community and the exaggerating the force of intrinsic motivation that the members have for learning and sharing knowledge, omitting to take into consideration power issues and heterogeneity in organizations (Østerlund & Carlile, 2005). The empirical examples given in Wenger and Brown and Duguid's writings are taken from a variety of communities, along dimensions like knowledge intensity and degree of practical work.

Occupational communities (van Maanen & Barley, 1984), also a horizontal interaction, is "a group of people who consider themselves to be engaged in the same sort of work; who identify (more or less positively) with their work; who share a set of values, norms, and perspectives that apply to, but extend beyond, work related matters and, whose social relationships meld

the realms of work and leisure" (van Maanen & Barley, 1984:295). Furthermore, an occupational community has a degree of autonomy as a key feature (Marschall, 2004). However, this is not a description of an interaction; it is a description of common features of members of an organization.

3.1.1 How do opportunities emerge?

An opportunity for learning and knowledge creation can be planned or can emerge by chance. Physical proximity increases the emergent type of opportunity for interaction and hence for learning and knowledge creation. Physical proximity facilitates face-to-face interaction, and one of the advantages is that it is easier to avoid misunderstandings (Kraut et al., 2002), and in its turn mistakes (Hedberg, 1993). In an environment where practical hands-on work is a large part of the activity, it is not necessarily the conversation that leads to learning – rather observational learning (Bandura, 1977) "passive monitoring", which means that information and knowledge can be picked up even without any specific communicative intent (Kraut et al., 2002:154).

The facilitation and creation of CoPs, rather than just perceiving them as an emergent organizational feature, is a central question of how to manage knowledge. It is a question of whether this intervention will hurt and obstruct the knowledge processes, rather than facilitate them (Thompson, 2005). If they are emerging phenomena it will be relevant to discuss where and if they have opportunity to emerge. Wenger states that "learning happens, design or no design" (Wenger, 1998:225). Wenger defines design as "a systematic, planned, and reflexive colonization of time and space in the service of an undertaking" (Wenger 1998:238). There has been much emphasis on non-colonization in the discussion of communities of practice. Communities of practice can be "recognized, supported, encouraged, and nurtured, but they are not reified, designable units", which also means that "learning cannot be designed, but designed for" (Wenger 1998:229). The CoP frameworks seem to be contradictory in how the issue of facilitation is presented and hence design as a possible facilitator for learning and knowledge creation. However, all organizations will have a certain design, whether deliberate or not and whether fit for learning or knowledge creation or not, and in every organization there are no doubt various characteristics that facilitate and hinder learning.

Interaction and collective reflection are seen as necessary conditions for sharing and creating knowledge (Nonaka & Takeuchi, 1995; von Krogh et al., 2000). "Learning is seen to emerge within 'communities of practice' through the improvised responses which individuals make to demands

situated within such contexts" (Scarbrough et al., 2004b:1581). The aspect of interaction is key, and learning takes place in the negotiation of meaning which happens between people (Lampel & Bhalla, 2004), but it does not exclude the codified dimension of knowledge. Rather, it can be seen as operating "along a continuum where technologies or inscriptions and verbal communication are the two end points" (Styhre et al., 2006:84).

In the CoP framework the communities are described as emerging as horizontal communities with members from more or less the same occupation and hierarchical level. Whereas vertical interaction which could be seen as vertical communities, are often a result of reporting relationships, teams or projects or other types of interaction that emerges as a result of the character of the work or the way work is organized. Members of different occupations interact with others, spanning both departmental and hierarchical boundaries.

Vertical interactions or communities are interactions where the participants are heterogeneous in terms of occupations, positions in the hierarchy, departmental affiliation etc. In a vertical community the knowledge base may differ largely between the participants, they may belong to differing epistemic cultures (Knorr-Cetina, 1999), and the level of redundant knowledge can be low (Cohen & Levinthal, 1990; Nonaka, 1994). This forms, on one hand, a more challenging point of departure for learning than in horizontal communities. The challenges can be due to power issues, cultural issues etc. On the other hand, the diversity opens for opportunities of knowledge creation in a different way than among peers. Knowledge diversity in a community is considered to be a strength, and diversity facilitates access to a broader technical and social information network, which means that the group has knowledge of a wider variety of potential approaches and solutions which can improve the quality of the task solution (Owens & Neale, 2000).

One such vertical community much used in organizations today is the project group. A project group is usually initiated top-down and is seldom an emerging activity. It does however have some features of a community of practice. The purpose of projects is to solve specific problems and tasks, usually within a limited time period. As we shall se later in this dissertation, in the organization under study project work is in frequent use, also for learning purposes. In the following I will describe the features of project work relevant to learning and knowledge creation and discuss whether it can be seen as a place for learning and knowledge creation.

Project based forms of organizations and increased use of projects in organizations in general, opens new fields for learning (Scarbrough et al.,

2004a). Projects are organized in short term groups to solve clearly defined tasks within a set time. Scarbrough, Bresnan et al. (2004a) identify three major dimensions of project-based learning: the practice-based nature of knowledge and learning in organizations; the relative autonomy of projects; and the integration of knowledge within projects, but conclude that there is a disparity between the learning that takes place within the projects and the lack of learning between the project and the rest of the organization. Within the project, the same mechanisms are found as in a community of practice. Project groups hardly qualify as communities of practice, since CoPs are essentially informal and "produced by its members through mutual engagement" (Wenger, 1998:118), and projects are usually initiated top-down and the mutual engagement is created by the goal of the project, which also usually terminates once the goal is reached or the project is terminated for other reasons. However, projects may be seen as a field for learning and knowledge creation and the members often represent and overlap various communities of practice in the organization. The project group and its meetings represent a place for the employees to interact. Depending on how the project group is assembled, it may have some features still like a community of practice: absence of introductory preambles, high degree of redundancy, shared stories and jargon etc. (Hanks, 1991; Wenger, 1998).

Research on learning generated by projects acknowledge the potential for learning within projects, but at the same time recognize the difficulty of transferring it to the rest of the organization (Scarbrough et al., 2004b). However, this research often has the project as the unit of analysis which means less focus on "the mechanisms influencing the relationship between learning within projects and learning in the other parts of the organization" (Scarbrough et al., 2004b:1580). In this study, projects are seen as part of how learning and knowledge take place in the whole organization and as part of the management's strategy for knowledge management.

Between the projects and the rest of the organizations learning boundaries emerge, and knowledge is sticky within the project frame (Brown & Duguid, 2001). Interestingly enough, co-location has been identified as an important factor on knowledge integration among project members, which is a matter only scarcely commented on in the literature on CoPs.

In the next chapter I will move on to discuss *the place* for learning and knowledge creation, in a literal sense. The places where learning is "given structure by work" (Lave & Wenger, 1991), is closely connected to how labour is divided and tasks are performed. This is often simply a question of working together or even just bumping into each other in the course of work and task performance.

3.1.2 A place for interaction - Where do opportunities emerge?

There is a claim in this dissertation that the place for learning and knowledge creation, the *where*, has received scarce attention in the existing literature on learning in organizations. Roberts (2006) calls for more research on the importance (or lack of importance) of geographical proximity, since several researchers have held relational proximity for instance, to be of importance.

Of the contributions in theory, typically several contributions come from the IT/ICT field; either in what sometimes appears as a realization that the virtual connections cannot always substitute the face-to-face contact or from research on dispersion and remote work in different forms. In the latter case, a first step is often to identify the features and possible advantages of collocation and interaction, in order to compare to the features of remote collaboration (Kraut et al., 2002; Olson, Teasley, Covi, & Olson, 2002). Some of the findings indicate that physical proximity does not only increase the likelihood of collaboration, it also stimulates collaboration among people "who might otherwise not work together" (Kraut et al., 2002:139). The way work is performed is made visible through seeing each other in action, and interaction is enhanced through collocation. Collaboration cannot be reduced to collocation, but the proximity increases the chance of bumping into each other and in turn the chance of starting a conversation (Kraut et al., 2002), and conversations are opportunities for learning and knowledge creation. (Kraut et al., 2002)

In this study the concept of *place* can be described through two features: Firstly, as a place created with the purpose of being an enabler for learning and knowledge creation, or as a place that through its function turns out to bring people together in some kind of interaction. This is what Earl call a place for contactivity (Earl, 2001) An example of this can be a physical place like a "waterhole" in modern disguise around a coffee machine. Secondly, the concept of place can be seen as a place where employees interact and collaborate; it is physical but also "portable" in that it emerges during work and in collaboration between employees (Østerlund, 2008), and is sometimes triggered by technology and other artefacts. Both of these are underpinned by the assumption that learning takes place in interactions.

It is beyond the scope of the study to give a detailed account of the theory on learning process – on what learning is, but I find Schön's concept of reflective practice relevant. Schön indirectly discusses where learning takes place in his account on *reflective practice* and *reflection in action* (Schön, 1983; Yanow, 2007). Schön distinguishes between reflection-in-action and reflection-on-action. This is a dividing line which is of interest in the context of this study, since learning during work is under study and perhaps

especially in performing practical tasks. The difference between reflection in and reflection on makes a difference, and Schön is very explicit in stating that this is due to the fact that "our knowing is ordinarily tacit" (1983:49). *Reflection-in-action* is when the practitioner reflects on what she is doing while she is doing it. Schön (1983) does compare reflection-in-action to Hannah Arendt's concept of "stop-and-think" which hints even more to reflection taking place in the midst of task performance. *Reflection-on-practice* (on as opposed to in) happens after action has taken place, and can be *out of* the actual hands-on work situation.

These differences between reflection-on-action and reflection-in-action may seem minor and unimportant, and we could say that the major point is that there is a reflection going on in practice. However, if we speak of 1) collective reflection in addition to individual reflection and 2) know-how and skills and tacit knowledge that need visualization in order to be reflected on, then reflection-in-action and reflection-on-action appear to be two different processes. These reflective conversations (Schön, 1983) that the practitioner conducts with herself during task performance (action), is likely to be an internal conversation, and seems to have little to do with collective reflection. As Yanow and Tsoukas state: "despite his emphasis on practice, Schön was a cognitivist after all" (2007:6). However, Schön's example on jazz musicians and how they "make on-the-spot" adjustments to the sounds they hear" (1983:55) points to a "collective conversation", which is similar to the interactions that this study focuses on. It deviates, however, from the collective reflection in that for the improvising musicians there is no demand to express and codify their knowledge (other than codified as music), rather they listen and watch and act on what they see and hear. Both these types of interactions are relevant for a hospital setting, and the opportunities for them to emerge are under study here.

Schön also has some examples from training situations, where we can guess that there is collective reflection in action going on, but he does not state it explicitly. He is more explicit about the reflective conversation that the practitioner will have with his client. Still, even though the collective does not seem to have been Schön's 'business', his framework of reflection-in-action and reflection-on-action contributes to the rationale for posing the research questions that this study does.

One of the theorists that have been quite specific on the notion of a place for learning and knowledge creation is Nonaka (1994), and through his examples it is possible to catch sight of the need for collaboration and physical space. The place in Nonaka's framework is *ba*, a concept borrowed from the Japanese philosophy of Nishida, and although examples of ba in

Nonaka's works almost without exception refer to face-to-face situations, it is underlined that ba can be emotional, virtual or physical (see chapter 3.1).

Ba can be understood as a place and this notion of place is seen as necessary for knowledge creation in Nonaka's framework, It does however not refer to just a physical space, but a specific time and place, and it is a concept that "unifies physical space such as an office space, virtual space such as e-mail, and mental space such as shared ideals" (Nonaka et al., 2000:14). This is relevant for the study at hand since it implies the connection of time and place and interaction and since the fitting of these three factors has implication for the physical layout and for how work is organized. Especially since the two processes that include conversion from tacit knowledge (respectively to tacit and to explicit knowledge) "it is important for the participants to share time and space" (Nonaka et al., 2000). In a hospital, like the case at hand, the sharing of time and space in order to observe co-workers' task performance or "passively monitor activities going on around them and pick up reliant information without explicit communication" (Kraut et al., 2002:154) will be situations I will look for in the empirical study.

The different knowledge conversion processes in Nonaka's framework need a *place*, and these different places, or ba, have different characteristics according to their purpose. At the core of this theory and relevant for the study at hand is the notion of tacit knowledge, since focus is on work based learning. There are four categories of ba; each pertaining to one of the knowledge conversion processes: originating ba for socialization, dialoguing ba for externalization, systemizing ba for combination, and exercising ba for internalization (Nonaka et al., 2000). So for example when tacit knowledge is acquired through socialization, the process needs an originating ba. An originating ba can for example be, suggest Nonaka et al., interaction with the customers (as in an example from Seven Eleven). The presence of the customer is, however, fit for another type of ba, namely the dialoguing ba, where the process of converting tacit knowledge to explicit knowledge takes place. In practice, and as we shall also see in the case at hand, the customer (or pupil, or patient, or student, or…) is often present, which restricts the collective reflection. Reflection on practice will therefore often happen *away* from the actual practice situation. This differentiation is important because *reflection-in-action* (Schön, 1983) will make the visibility of tacit knowledge, and externalization of tacit knowledge, possible; that is, if there is more than one person present. Schön does not emphasize the importance of the community of practitioners (Yanow & Tsoukas, 2007). If reflection is taken away from the action or out of practice (or out of earshot of the customer, student, patient etc.), it will not have immediacy to practice and the connection to tacit knowledge will be weaker. Knowing that cannot

usefully be isolated from the knowing how that makes it actionable (Duguid, 2005:114). (See useful discussion on the mutual dependence between knowing that and knowing how in Duguid, 2005).

Nonaka's concept of Ba has this physicality inherent in the concept. In Nonaka's theoretical framework (see chapter 2.4), Ba is seen as the place where the SECI processes take place. Nonaka's agenda includes the separation between "interaction during task performance" and "separate from task performance", which is inherent in his model as two of the knowledge conversion modes (internalization and externalization) (Nonaka, 1994), and through his use of examples Nonaka shows that Ba is often purposefully organized, and often they are organized out-of practice.
Similar to Nonaka, Wenger (1998) claims that the communities of practices can be also be virtual or even emotional. The community of practice framework does not seem to recognize potential problems in geographical dispersion. A work-related community is not a community of practice "unless members interact and learn to together" (Wenger, 2007:1), and this interaction is, as Wenger says, a condition for learning and knowledge creation. In the communities of practice framework the opportunity for emergence of communities in practice has to a large degree been taken for granted. Wenger et al. (2002) write that "What allows members to share knowledge is not the choice of specific form of communication (face-to-face as opposed to Web-based for instance), but the existence of a shared practice – a common set of situations, problems and perspectives" (page 25).

Although the community of practice framework is essentially about a shared context that functions as a communication channel and a field for interaction, the shared physical place is either seen as unnecessary or it is taken for granted: "Co-location is not a necessity" (Wenger, McDermott et al. 2002:25). Wenger et al. admit that the need for face-to-face interaction is an open question, but underscores that the physical facilitation is subordinate to the "common set of situations, problems, and perspectives" (2002:25). Physical place is mostly discussed as one of several possible spaces for communities to emerge or to be created. This may be due to the character of the research in the field, which has been conducted in "classical knowledge organizations", where intrinsic motivation is presumed to increase the urge to interact, and rules and procedures are kept on a low level.

The critics of communities of practice are likewise seldom engaged in the need for a physical arena of CoPs and how or if their emergence is facilitated. There are some exceptions. Kornberger and Clegg (2004) call for "bringing space back in", and Handley, Clark et al. (2006) open the problem of not having the opportunity to physically meet, what they call 'spaces of possibility' and they tie this to the problem of sticky knowledge in a context

of inter-organizational projects. Roberts point to a number for critics of the CoP framework in her review article of 2006. The critique mainly concerns lack of discussion of issues like power and trust, but Roberts also calls for more attention to size and spatial reach as features of CoPs, as challenges for further investigation. She discusses whether other forms of communities are more appropriate for this approach, and she mentions collectivities of practice, as suggested by Lindkvist (2005), and argues for groups that are less developed or advanced in their cooperation, as appropriate for learning and knowledge creation (also discussed in chapter two).

In empirical examples presented by Wenger (Lave & Wenger, 1991; Wenger, 1998; Wenger et al., 2002), Nonaka (Nonaka & Takeuchi, 1995) and Orr (1996), the actual place for interaction is of central importance, though not commented on however, but rather taken for granted in analysis and conceptual frameworks. Other researchers like Yanow (2006) and Kornberger and Clegg (2004) call for more research attention to place within the field of knowledge management, and this is supported by Easterby-Smith, Snell et al. (1998). Yanow (2006) calls for the physical space to be included in the "return to practice", and so do Kornberger and Clegg (2004) as they argue that "organizations should be thought of as material, spatial ensembles – not just cognitive abstractions writ large" (page 1095).

Kornberger and Clegg further argue that instead of considering form to follow function, physical layout has the means to direct and redirect our attention, and this is what data from this study indicate. They point to how the physical design of a building creates challenges that have consequences for who speaks to whom and how much interaction employees have: In designing a building, potential problems necessarily arise: people between whom there seems to be no current and rational reason for communication will be separated, while people who are thought to share a common understanding and tasks will be located within an interactive space. There may even be steps taken to minimize the intrusion of apparently unrelated groups and to minimize the need for movement of staff by making sure that all facilities required for work are conveniently located. (Kornberger & Clegg, 2004:1104-1105) "Communication frequency drops considerably with distance and that after about thirty meters, it reaches asymptote. (…) Communication beyond thirty meters is difficult." (Olson et al., 2002:114).

Tools and artefacts also influence interaction. We use tools and artefacts when we make sense of practice (Filstad & Blåka, 2007). One important tool is language and this is crucial in the interactions in the practice communities. However, there are also physical artefacts that mediate the interaction when people work together, or they can have the opposite role, as barriers to co-operation and communication. Since the Hawthorne studies little attention

has been paid to physical structure within organization studies (Hatch, 1997). “Physical structure can be seen as providing opportunities for and constraints upon the communication of information and ideas, and the coordination of interdependent activities” (Hatch, 1997:251). Physical layout can also be seen as symbols of what an organization wants to be and its symbols can be seen as shaping behaviour. The Hawthorne studies were originally all about physical settings and influence on work productivity, but have since been regarded as a study of social influence on the same productivity. This has since marginalized studies on physical structure.

3.1.3 For whom do opportunities emerge? Differences across the units

The range of opportunities for learning and knowledge creation availability to employees across hierarchical levels, occupations and positions varies (Fuller, Munro, & Rainbird, 2004). This has both a political dimension of democratization and of equal access to knowledge, and consequently managerial implications for knowledge management. This is also a theoretical issue that touches on the perceived value and status of different types of knowledge (for instance scientific knowledge vs. vocational knowledge). As Fuller et al. point out, interacting for learning and knowledge creation is also a question of whether the individual decides to participate in or make use of the learning opportunities (Fuller et al., 2004). This is similar to the concept of non-participation, barely mentioned by Lave and Wenger (1991) and elaborated on by Wenger (Wenger, 1998). Wenger makes a list of possible reasons for non-participation, like using non-participation as a cover, as a strategy etc., and suggests that this is due to a number if conditions, including institutional circumstances (this is discussed in chapter 3.2.2). The present study has focus on ‘institutional circumstances’ which can also contribute to obstruct opportunities for learning and knowledge creation, and which will be discussed in the next chapter. This will also to a certain degree contribute to a better understanding of resistance to take part in learning and knowledge creation, or non-participation(Wenger, 1998). However, this is not the main issue here, since that is to compare where and how learning takes place within the four units.

This study is designed with four units from one organization, two wards and two support staff units, in order to examine the difference between these units along the dimension ‘distance to core activity’ (of the hospital). This dimension is inspired by Mintzberg’s model (Heggen, 1995; Mintzberg, 1983). This is also discussed in chapter 4.2.2. The support staff units are at the low line of the hierarchy, and the literature on these groups which particularly problematize the status of the unit within the organization within

the frame of learning in organizations, is scarce. Some of the empirical studies will be presented in chapter 3.3 further down.

In the next chapter the phenomenon of barriers that obstruct interaction and hence the opportunities for learning and knowledge creation are discussed.

3.2 Barriers to learning and knowledge creation

> "Building communities and organizational learning for that matter is more about removing barriers instituted by the organization that prohibit employees' natural tendencies to socially construct knowledge, negotiate meaning and internalize cultural enablers than creating specialized learning programs or processes to codify and distribute all organizational knowledge" (Plaskoff, 2003:181-182).

The barriers instituted by the organization, in Plaskoff's words (quote above) are addressed in this chapter. Barriers to learning and knowledge creation have emerged in the empirical analysis, and there is a line of research on barriers, though there is still a claim that barriers are not sufficiently identified (Riege, 2005). Learning can be obstructed by power patterns, by structure, by organizational culture, by distinct characteristics of professions, by lack of time, lack of opportunities etc. The mere identification of obstructions to learning and knowledge creation in organizations may contribute to abolish them, or to introduce measures to deal with them manifested in a strategy for knowledge management, while the lack of a strategy for knowledge management can in itself be seen as a barrier (Nicolini et al., 2008; Riege, 2005).

Calhoun and Starbuck (2003) have studied whether barriers to knowledge are actually harmful or whether they sometimes can be seen as beneficial. They classify barriers as 1) barriers within individual researchers and 2) barriers in organizations and 3) barriers in professions (Calhoun & Starbuck, 2003). The barriers within the researcher, for instance cognitive, will always apply to any research, this one included. This is however not the focus of this research – rather a methodological issue. The two latter classes of barriers apply. However, barriers in organizations are seen by Calhoun and Starbuck on an aggregated level, where as this study is occupied with the notion of spatial and physical barriers. As we shall see later, however, the physical barriers are intertwined with the other organizational barriers. Likewise, barriers in professions (Calhoun et al.'s third category) are highly relevant in a professional bureaucracy like a hospital. The focus in Calhoun and Starbucks article is on researchers and academics, while the informants in this study have little in common with these professions.

In a review of barriers of knowledge management in the healthcare sector, Nicolini et al. (2008:255) identified the following barriers of KM success: "Over management and interference from political sphere, clinical managerial conflict, professional barriers, lack of trust, poor quality relationship, insufficient technology skills, and lack of strategic breadth and leadership". These barriers are not unlike the barriers found in other industries, and can be found among "The three dozen knowledge-sharing barriers managers must consider" drawn up by Riege (2005), who classifies the barriers in three categories: individual, organizational and technological. The organizational barriers include unclear KM strategy, lack of leadership, shortage of spaces to share and reflect, lack of reward systems, unsupportive corporate culture, knowledge retention is not prioritized, lack of infrastructure, lack of sharing opportunities, hyper competition, restricted knowledge flows, physical work environment and layout, internal competitiveness, hierarchical organization structure, and size.

In the empirical part of the study, several of these factors emerged as barriers. Following the research issue, several of the points above apply to this study. In the research question I ask where and how learning and knowledge creation take place, and in the following two factors are pursued through the labels physical layout and division of labour. The question of KM strategy is discussed above in chapter 2.1.

3.2.1 Physical layout

In the present study, emergent barriers seem to be physical layout and division of labour which according to the classification above are linked to system and processes and can be categorized as organizational barriers.

In Rieges's list of organizational barriers we find "lack of formal and informal spaces" and "physical work environment and layout of work areas restrict effective sharing practices" (Riege, 2005:26). The studies referred to here however contribute little in terms of physical layout and division of labour, but Riege states that "company floor layout or spatial arrangements" are often overlooked (2005:28). Further there is a claim that "an open and flexible organizational structure supports the sharing of knowledge best" (Riege, 2005:26), which is another indication that research on knowledge and learning in organizations frequently focus on a category of organizations far removed from organizations like hospitals – cf. the discussion on knowledge intensive organizations in chapter 2.2, linked to another barrier mentioned by Riege, namely "hierarchical organisation structure inhibits or slows down most sharing practices" (Riege, 2005:26).

Empirically, as we shall see later, it is problematic to divide the two factors physical layout and division of labour. It appears that they influence each other, since a physical layout with for example long distances and on single-bed-in-patient accommodation, as in the case under study, will influence the way labour is divided. Likewise, the division of labour will influence the way the places and physical premises are used. Analytically, however, it seems appropriate to divide the concepts, and in the next chapter I will discuss division of labour as a barrier for learning and knowledge creation. I will return to the discussion of the interconnectedness between them in chapter 7, since the interconnectedness is more empirically than theoretically informed.

3.2.2 Division of labour

The way labour is divided and people collaborate, work together and share practice will have implications for how they learn and create knowledge in practice. Division of labour lead to divisions of knowledge (Hayek, 1945).

Two aspects of the issue of division of labour will be discussed here: division of labour as a barrier for learning and knowledge creation, with particular focus on autonomy, and division of labour as influenced by or as influencing *unwillingness* to interact for the purpose of learning and knowledge creation (Duguid, 2005). The first aspect, division of labour as a barrier, is also related to the "spatial" dimension: how division of labour divides the employees and sends them off in different directions, alone or together.

In his critique of Lave and Wenger's book on situated learning, Østerlund observes: "All the settings characterized stand out as relatively small communities with a fairly low division of labour." (Østerlund & Carlile, 2005:97). Wenger is however not estranged from the issue of obstructions to learning and states a whole row of institutional arrangements that "contribute to an experience of non-participation (like low status and lack of encouragement), but contrary to the focus of this study, Wenger describes how the employees act out their non-participation and describes how it is anchored in their identity. Physical layout (as discussed in chapter 3.2.1) and divison of labour are institutional arrangements, apparent as such in the present study.

Flood (2001) asserts that system oriented leadership is more "able to encourage people's involvement, to enable democracy, and to provide conditions for autonomy" (Flood, 2001:134). Similarly, within the community approach in knowledge management research (Newell et al., 2002) and within the situated learning perspective, the focus is on facilitating

learning and knowledge creation, and providing conditions like autonomy (Nonaka, 1994) through allowing communities of knowing to emerge (Thompson, 2005; Wenger, 1998).

Autonomy can be seen as the other side of the coin of interaction. Autonomy is a central feature and condition in theory on learning and on motivation (Deci, Connell, & Ryan, 1989), and is seen as an important feature in knowledge intensive companies and a necessary condition for organizational learning and knowledge creation. Autonomy means self organization and can be applied at all levels; individual, group and organizational. By allowing people to act autonomously, the organization may increase the possibility of introducing unexpected opportunities (Nonaka, 1994). On the meso level or group level, the degree of autonomy seems to have significance for learning and knowledge creation within the group. Projects are examples of such groups, however with difficulties in sharing this knowledge in the wider organizations (as elaborated on above).

In traditional and hierarchical organizations, the degree of autonomy is closely connected to how labour is divided. The division of tasks is intertwined with different kinds of autonomy, like professional autonomy (Freidson, 2001), occupational autonomy (van Maanen & Barley, 1984) and task autonomy (Langfred & Moye, 2004). Professional autonomy and occupational autonomy are concepts that refer to the groupidentification of an individual in the capacity of profession or occupation, and can reach further than the work situation. Occupational community can be defined as "a group of people who consider themselves to be engaged in the same sort of work; whose identity is drawn from the work; who share with one another a set of values, norms and perspectives that apply to but extend beyond work related matters; and whose social relationships meld work and leisure" (van Maanen & Barley, 1984:287).

On the practical level, we find task autonomy, which means "The degree to which the individual is given substantial freedom, independence and discretion in carrying out a task, such as scheduling work and determining procedures to follow. … a job can consist of multiple tasks, with variations in the amount of autonomy granted across those tasks" (Langfred & Moye, 2004:935). This is a limited form of autonomy, and even if the level of occupational and professional autonomy is low, an individual can have task autonomy. From the field of psychology and more exactly psychological job demands, we se a similar phenomenon in the "Job Demand-Control Model, mainly used to investigate stress and health at work, but Ouweneel et al. claim that this model is applicable also when it comes to informal workplace learning (Ouweneel et al., 2009:30). The model characterizes the work environment "as a combination of psychological job demands and the degree

to which employees can decide for themselves what to do, how to do their work, and when they will do a particular task" (Ouweneel et al., 2009:30). The latter is called job-control and is similar to the concept of task-autonomy. In their research Ouweneel et al. found that job control had a positive influence on informal learning in the workplace.

Individual task autonomy is of interest in this study in several respects, but particularly in connection with opportunity for interaction. With a higher degree of self organization it is likely that the individuals also have freedom for interaction and cooperation, which in turn opens for learning and knowledge creation in practice.

In rounding off this chapter on opportunities I will comment on the fear for organizing too much in facilitating for learning and knowledge creation (Brown & Duguid, 2000). The fear of organizing and managerial interference must be seen in connection with the characteristic of knowledge and the nature of communities of practice. Knowledge is seen as partly tacit, and the killing points to the debate on whether it will "die" if we try to organize it. Communities of practices are seen as inherently emergent and bottom-up, and there is a fear that they will not function as fields for learning and knowledge creation if they are organized top-down.

3.3 How is this focused in empirical studies?

In this following review of empirical studies I have basically attempted to take the *where* and *how* as points of departure, and have ended up looking at studies which are concerned with for instance where, but not necessarily learning and knowledge creation. Rather they have been concerned with work per se and learning only implicitly. It has also been a concern for me to find studies from organizations that cannot be labelled typically 'knowledge intensive'.

3.3.1 Learning at work

In empirical studies, learning at work has been focused on in studies through a number of issues. Some have focused on work and only indirectly on learning, many have focused on ICT as a tool for learning, educational modelled learning is very common, and the studies are often set in knowledge intensive organizations.

Yanow (2006) lists a large number of studies, mainly from the 60s and 70s that can be characterized as practice-based studies or informed studies of what people do in organizations. The focus of these studies was not on

learning and later, the majority of studies performed on learning and knowledge creation have been conducted in "classical knowledge intensive organizations" which is the classical knowledge management approach, or the codified approach (Hansen et al., 1999). One important exception is Julian Orr's study of photocopier repair technicians (Orr, 1996). In this frequently quoted study, the focus is on describing work, and how work forms the workers' identity. Orr very seldom mentions knowledge or learning, but evidently much of what he describes can be labelled just that. He describes the oral culture of the technicians, how they make sense in their occupational community. Orr frequently describes their meeting places and how they are used for learning and knowledge sharing, although he does not comment extensively on the actual places and how they exist and appear. The place for interaction is not a main issue for Orr. However, in his presentation of the technicians through vignettes, he picks stories from breakfast meetings and collective lunches at restaurants. Orr finds that there are large individual differences to how much they work alone and how much they work together, but there is no doubt that meetings and interaction are important. This occupational group has a personalized knowledge strategy in use (Hansen et al., 1999).

Wenger has empirical examples where work is described, and some of these are from practical work situations like midwifery, butchering, and tailoring (Lave & Wenger, 1991); in these examples however, emphasis is on newcomers' entry to the community. These examples emphasize talking, interaction and cooperation, but the question of space is often treated on an elevated level; a space for interaction can be physical or virtual (Wenger, 1998). Nonaka, who drew a lot of interest to his conceptual framework, initially did not have extensive empirical contributions. Later, there have been some contributions (Kusunoki et al., 1998; Lee & Choi, 2003), mainly with quantitative approaches. In Orlikowski's (2002) study of everyday work practices in a large software company in the Netherlands, where she interviewed almost one hundred employees in different work categories, the importance of face-to-face interaction formed part of the findings. Despite a highly distributed organization, the cost of bringing people together is seen as necessary (Orlikowski, 2002). This face-to-face interaction cannot be left to emerge by itself, but is a conscious and planned activity. This is similar to Handley et al.'s study on "spaces of possibilities" (Handley et al., 2006) in interorganizational project groups within the project-based learning field. Focus is on participative spaces of possible actions and they introduce space-categories; physical space, relational space, and existential space, and call for more research on the outcome of reflection in practice. They suggest using a spatial perspective to enhance learning in projects. Working side by side and sharing the same values are seen as necessary conditions for knowledge to spread within the organization in a study of knowledge sharing

between professionals in hospitals by Tagliaventi and Mattarelli (2006), where working side by side and sharing day-to-day activities is labelled operational proximity. This study is interesting in the context of the present in that it also includes different occupational groups and units, but all groups in this study are categorized as medical personnel.

Patriotta (2003) has studied shop-floor workers in the Fiat auto plant in Italy, and although his main goal is to provide new insights into the role of narratives, he also emphasizes the study of knowledge as an empirical phenomenon – the way it is visualized on the shop floor. It bears similarities to Orr (1996) in that Patriotta observes that when a problem occurs "The situation is socially constructed through a network of conversations between the members or the team, and by piecing together different sources of information" (Patriotta, 2003:369). In this study, the focus is on the typology of knowledge in relation to the actors, and the content of the narratives as sense making mechanisms.

Empirical studies within or related to the information technology discipline, have focused on enablers for knowledge transfer where enablers are operationalized for example as knowledge management methods, structure, culture, people, IT, industry characteristics and knowledge characteristics, (Lee & Choi, 2003). Lee et al. state that culture is by far the most popular in the studies of their review. Structure is operationalized in their own study as centralization (of decision authority) and formalization (degree of formal rules, policies and procedures), and their findings show that there is no relationship between formalization and centralization on one hand and knowledge creation on the other. More interestingly than the findings here are the operationalization of 'enabler structure', which pays no attention to possible enablers like physical layout or division of labour. Their variable learning, however, another enabler variable, includes the following item "opportunity for informal individual development other than formal training such as work assignment and job rotation" (Lee & Choi, 2003:223). This operationalization is interesting since it grasps the possible enabling ability of having opportunity for learning and knowledge creation, which is the focus of the study at hand. The findings in Lee et al.'s study show that collaboration, trust, learning, and centralization are relatively significant predictors for knowledge creation. However, since the variables are made up of several items and the attention paid to opportunity is minuscule in the study of the context, the operationalization of the variables is of larger interest than the result. Several of the studies referred to are from the ICT field and even though for instance software development (Kraut et al., 2002) might be considered as a craft, the hands on practical work is rarely emphasized. The need to exchange physical objects, like you will have to a certain extent in a hospital, is not present. Also the examples are often from

settings where knowledge creation (R&D) and for example software development is the goal of the task performance, as opposed to more repetitive tasks.

Several of the studies mentioned above are also about tacit knowledge. Nonaka, who in many ways brought the concept to everybody's lips, has little in the way of empirical studies on tacit knowledge. There is however a famous example of the development of a bread baking machine, where the engineer observes a baker in order to design the kneading of the bread in the right way (Nonaka & Takeuchi, 1995). Orr's study of the photo copier repair technicians is also an important study with respect to investigating tacit knowledge since the visualizing of knowledge appears clearly in his description (Orr, 1996). This is also what occupies Styhre et al.'s (2006) study on construction workers in what they categorize as non-writing communities. They suggest that "the learning organization literature should pay more attention to communities of practice that rely more on verbal interaction rather than written documentation" (Styhre et al., 2006:83). An underlying assumption is that not only is knowledge sometimes tacit, but even if it is possible to codify it – verbal communication is richer and is often preferred to written material.

Learning and knowledge creation in practice and in communities of practice is often seen as related to the diffusion of knowledge from the community to the rest of the organization (Yanow, 2006). In a study of learning in projects, one of the findings indicates that physical relocation of the project members (project members from different parts of the organization) was associated with increased knowledge integration, and "the development of new, shared practices through these activities stimulated learning on project level" (Scarbrough et al., 2004b).

In the research field of space (Kornberger & Clegg, 2004), researchers often toy with structure and chaos, and what they call balancing "predictability and randomness" in order to facilitate knowledge sharing and knowledge creation. Again the empirical studies are performed in knowledge intensive organizations like Hillier 1996 (in Kornberger & Clegg, 2004), which was a study from research labs, in other words the classical knowledge intensive organization. Hillier (1996) calls for a generative building that combines order and chaos. This is not what we associate with a hospital or other bureaucratic and procedure based organizations, neither is "ambiguous and incomplete work environment".

In a study from Eli Lilly and Company on building communities of practice, as a means of more quickly reaching levels of interaction (Plaskoff, 2003), Plaskoff introduces a model in five steps (APPLE). The first step is

assessment. "The purpose of assessment is to gather information about the current state of the existing or potential community to determine whether community building is necessary, and if so, what direction to take" (Plaskoff, 2003). Assessment is determined by several criteria, and one of them is *geographical dispersion*. There is however no further mention of how this criteria is used.

In a study of what the authors call radical collocation, which means "being within a few feet of each other" Olson et al. set out to identify the features of collocated work with the goal of developing technologies to support these aspects. "Communication frequency drops considerably with distance and that after abut thirty meters, it reaches asymptote. (…) Communication beyond thirty meters is difficult." (Olson et al., 2002:114). Even though this is studied in "staged" work groups and sites like the project room and the team room, unlike the main focus of this study which is on the daily task performance; this radical collocation touches on the feature of collocation which is seeing each other in action. The team room and the project rooms, or the teams and the project groups, have as part of the purpose the intention of knowledge creation (software development), whereas in this study the focus is also on the unintentional and unfocused learning that takes place during work. Outcome could be measured and compared, since the tasks were limited in scope and time. More important than the performance measures, however, is what actually happened on the sites. "While being collocated, each member had local control over what he or she was attending to at each moment, so that different people were paying attention to different people or artefacts to suit their current goals."(Olson et al., 2002:119), and they found that a questioning look was enough to evoke a response from one of the other team-members. This is the value of "being aware of each other's work", and they learned from each other without instructions (Cohen & Bacdayan, 1994). This is a different angle from the focus of this study, where work is collocated in principle and both technology and process is developed to enhance performance, but it points to face-to-face interaction.

As we can see from the review above, where and how learning and knowledge creation takes place in organization has been studied with various foci. Even though the *where* is emphasized in some studies, it is seldom connected to learning and knowledge creation within a knowledge intensive organization which also has a strong element of practical work. Rather than focus on learning and knowledge, other issues like power, identity and project work are central. In addition, the studies are very often done in settings that are within so-called knowledge intensive companies, and often also settings where research and development are part of the main tasks. There are some exceptions, where the activities are tied to practical hands-on tasks and diverse organizations with a heterogeneous work-force – or where

several occupational groups are included (Patriotta, 2003; Styhre et al., 2006)

3.3.2 Learning in healthcare

Four areas within healthcare studies on knowledge management relate to work based learning and knowledge creation: (1) social learning initiatives, (2) KM tools and initiatives in the healthcare sector, (3) the preference of local knowledge in the making of clinical decisions, and (4) the barriers and enablers of KM in the healthcare sector (Nicolini et al., 2008). Studies on work-place learning in health care are often focused on student-like groups, like nursing students and teachers (Heggen, 1995; Warhurst, 2008), newcomers in organizations (Filstad & Blåka, 2007), nurse educators in practice e.g. Heggen and Milner et al. (Heggen, 1995; Milner, Estabrooks, & Humphrey, 2005), professions and characteristics of the nursing profession (e.g. Hem, 2008), and frequently the focus is on doctors as an occupational group (Currie, Waring, & Finn, 2008; Østerlund, 2008). As in other fields, a great amount of studies on knowledge and learning in healthcare focus on the role of ICT as facilitator (Ho et al., 2004).

The ICT based knowledge management tools have long since made their entry to hospitals and healthcare institutions, and this is reflected in a number of studies on knowledge management in this sector (Currie et al., 2008; Guah & Currie, 2004; Swan & Scarbrough, 2001; Østerlund, 2008). ICT systems, in combination with standardization of curing solutions through use of Evidence based medicine, are seen as an improvement to the hospitals common strategy for meeting new demands on knowledge: training and courses (Guah & Currie, 2004).

Findings from some of this research supports the general research issue in this study in that findings are often related to the shortcomings of ICT. ICT cannot fulfil all the needs for knowledge management and as a result the studies call for face to face, co presence, or operational proximity in interaction for learning and creating knowledge (Kraut et al., 2002; Tagliaventi & Mattarelli, 2006). Or they mention that additional strategies are necessary, like for the NHS where “capture and disseminate the learning and tacit knowledge generated through work”(Guah & Currie, 2004:1147) is a pronounced objective. Some studies see ICT as an inappropriate tool due to power- or political issues (Currie et al., 2008). This point to the understanding of the nature of knowledge, which was also part of the main findings in a study of patients safety and service quality in the NHS by Currie et al. 2008. The tacit aspect of knowledge held by certain occupational groups is seen as a barrier to sharing knowledge, since it is not

made explicit also partly due to a power issue between doctors and other occupational groups (Currie et al., 2008).

As mentioned in chapter 3.3.1, Tagliaventi and Matarelli (2006) have performed a study of knowledge exchange between professionals in a hospital in Italy, and the findings from this study on operational proximity are of relevance to the questions posed in the present study on place for learning and learning during work.

Learning opportunities were found to have a facilitating function in a study on nursing practice in relation to perceived barriers to and facilitators of evidence-based practice in the US (Brown, Wickline, Ecoff, & Glaser, 2009). Brown et al. review a long list of barriers to adopting evidence-based practice, including lack of time, lack of authority to change practice, organizational cultures rewarding routine, task-based practice (Brown et al., 2009), and in their study they find that learning environment such as learning opportunity and mentorship, organizational culture and availability and simplicity of evidence are perceived as facilitators, while lack of time, authority and support from other staff were perceived as the most important barriers. Task-based practice in this context refers to the time that is occupied with the tasks ordered by the doctor that the nurses have to perform, which is perceived to reduce her autonomy,

McNulty's study of a re-engineering project in a UK hospital (McNulty, 2002) forms a parallel to the re-engineering project in the hospital under study in this dissertation and is an example of interaction in projects. During the last decade much attention has been paid to 'evidence based medicine' and 'evidence based practice' (Broom, Adams, & Tovey, 2009). This is of relevance for this study since evidence based practice has implications for the view on knowledge in hospitals, and in organizations in general. Evidence based practice "promotes the widespread standardisation of clinical practice through meta-analysis and systematic review" (Broom et al., 2009:193), and "EBM acted to solidify the hierarchical relationship between consultants and junior doctors, reducing questioning, critical thinking and 'learning through experience" (Broom et al., 2009). This points directly to the phenomenon under study here; namely the opportunity for learning and knowledge creation during work, and points out the influence Evidence based practice has on the opportunity to interact on knowledge issues in practice, due to the underlying assumption in EBP on knowledge. Even though focus to a large degree is on the doctors in the studies on EBP, this has also been an issue for nurses and for research on nurses. Nurses have used EBP as part of developing their profession in a medical direction, while at the same time this is perceived as contradicting the true origins of nursing and the nurse as a holistic practitioner (Broom et al., 2009:199).

In this chapter empirical examples of studies in healthcare have been presented. In rounding off the part on theory, the next chapter will point to some of the central elements from theory that will frame the study.

3.4 Concluding comments and framing of the study

The main research question in this study is: *Where and how does learning and knowledge creation take place in different units in a hospital?* It is a study of how people learn while they work together. This research employs the idea that learning and knowledge creation in organizations happens in interaction between employees, which means work based and collectively with focus on practice knowledge. This does not exclude learning on individual level or the codified dimension of knowledge, but this is the focus of the study.

This study is not framed within one grand theory; rather I have had an eclectic approach and have helped myself to a variety of theoretical frameworks. Some of these approaches differ in their ontological assumptions, like for instance knowledge management and organizational learning, but they are both linked seeing knowledge and learning as "defining characteristics of a new epoch" (Scarbrough & Swan, 2003:497), though knowledge management often has a more practical than theoretical approach. A similar combination has also been used in previous empirical studies, see for instance Tagliaventi and Mattarelli (2006) and Doornbos et al. (2004). The focus is specifically on the interactions that emerge during the work day in the manner that the informants account for the course of their actions. I have leaned on the situated learning perspective where learning is seen as participation in practice (Lave & Wenger, 1991) is used to interpret the accounts from the informants. This contributes to a better understanding of where and how learning takes place (Warhurst, 2008), as well as do Schön's concepts of reflection-in-action and reflection-on-action (Schön, 1983), and Nonaka's theory of knowledge creation (Nonaka, 1994).

The point of departure is to analyze how the management perceives the strategy for knowledge management (discussed theoretically in chapter 2.1). The underlying view on knowledge and learning is claimed to be decisive for the strategy for knowledge management. Knowledge view can be seen as a continuum from practice knowledge to codified knowledge, where practice knowledge is a concept that includes the tacit dimension of knowledge, as discussed in chapter 2.3, but it is wider because it includes explicit knowledge that is articulated in interaction and collective reflection. On the other hand it is narrowed by its ties to practice. The dynamic aspect of knowing is included since knowledge will change through transfer and

translation during work and this will constitute learning and knowledge creation in practice.

Emphasis on the collective vs. the individual in a knowledge perspective points to the level in the organization where learning and knowledge creation take place. Focus on the collective dimension in the organization is underpinned by social learning theory, while focus on the individual level is underpinned by a cognitive view of learning. Learning on individual and collective level and the different dimensions of knowledge must be seen as complementary, rather than mutually exclusive, and knowledge or knowing is seen as a process that continuously takes place in the whole organization on all levels (Gherardi, 2001). This can be illustrated in figure 3-1 below (inspired by Nonaka 1994):

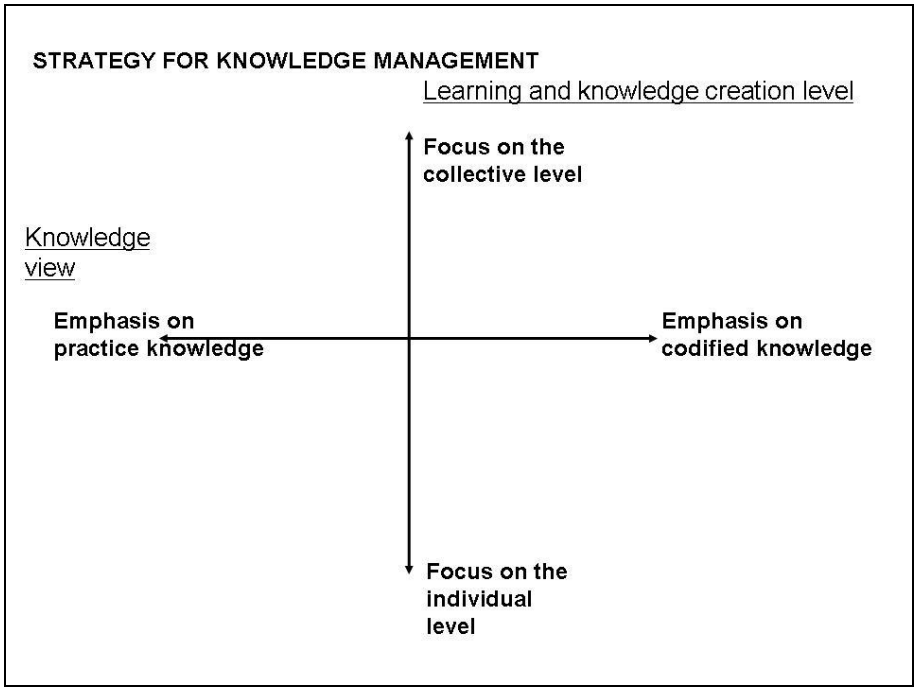

Figure 3-1: Strategy for knowledge management

All four "squares" in the model represent different ways of learning on different levels and in different contexts. The view or understanding of knowledge determines how the strategy is carved out. This framework is normative in that a strategy for knowledge management "should" cover all four squares. This figure can be used to illustrate the predominant knowledge view in the organization, and I will return to discuss this figure in chapter 7. In the case where the strategy for knowledge management

includes all four squares (illustrated in figure 3-2), the chances are that the full scale of knowledge and learning potential in the organization can be exploited. An organization that has a balanced view on the organizational level for learning and on different aspects of knowledge can be illustrated as follows in figure 3-2 along the same two dimensions:

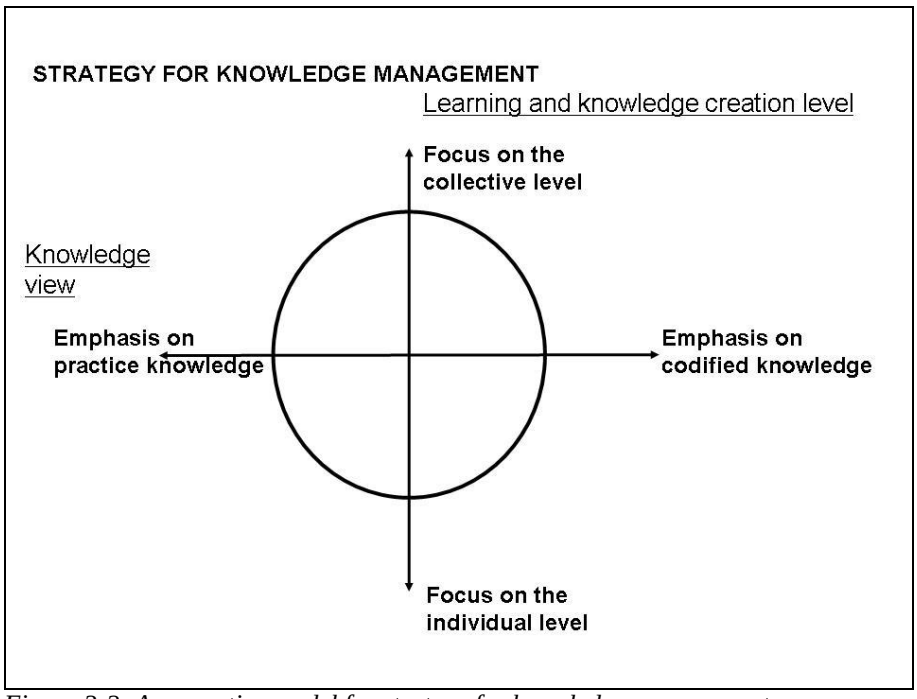

Figure 3-2: A normative model for strategy for knowledge management

A variety of theoretical contributions are used to identify and categorize the interactions and how they emerge during work. The interactions will be identified and analyzed mainly along the *vertical/horizontal dimension*, and the *during/apart from task performance-dimension*, which is inspired by Schön's concepts on reflection-in-action and reflection-on-action. While the differences between the units will be analyzed along the selection frame dimensions as outlined in chapter 4.2.2: distance to core and old/new premises. This is connected to place for interaction and incorporates the perspective of the different units under study, in which the discussion of the hospital as a knowledge intensive organization applies.

The last theme from the research questions is on how opportunities are obstructed. This is approached mainly through analysis of physical layout, in which I apply different approaches to place, from place for contactivity (Earl, 2001) to portable places (Østerlund, 2008), and division of labour, including the composed typology of autonomy, discussed in chapter 3.2.2,

where task autonomy is used as a label for the division of labour observed in the organization.

Bearing this theoretical framework in mind I set out to investigate this issue empirically, by way of methodology. In the following chapter on methodology I will outline a research strategy that I se fit for studying work itself and features of work that are not directly obvious to the informants. Learning and knowledge creation happens as part of the day's work, and often we do not even notice.

4 Methods

The aim for this chapter is to describe my scientific orientation and the research methods used in this study. It also includes a review of the considerations and decisions I made along the way. To study how people work and how and where they create knowledge represents a challenge methodologically, particularly since the phenomena under study are often embedded in the task performance and the individuals are not necessarily conscious of what is going on.

This dissertation is based on an interpretive study of four units in a single organization. The study was performed over a period of 18 months; hence, I had the possibility to follow the organization during that period. The key informant was interviewed on several occasions, and observation of meetings and daily routines was carried out at different points in time within this period. Most of the informants were interviewed at one point only, and they were asked to reflect on and describe, both the past and the present, by using elements of story-telling techniques. The organization is a hospital and for the purpose of confidentiality, is referred to here as Bell Hospital.

An overall aim in this study is to contribute to elaboration of theory on learning and knowledge creation during work, which is a theoretical field in evolution. I aim to describe and explore in order to better understand, and not specifically to offer causal explanations or predictions. To the extent that causal explanations are suggested, this will not be exhaustive causal connections, rather necessary than sufficient (for discussion, see chapter 4.1). Through an explorative approach, I am open to emerging issues relevant to the relatively open research questions. Here, generalizations pertain to a theoretical universe, rather than statistical probability, and the focus is on development of concepts and models as part of theory development (Eisenhardt, 1989).

My scientific approach is inductive and interpretive. My orientation is, however, not inductive to the degree that I am without theory. I do not claim inductive "purity" (Miles & Huberman, 1994) and did not set out to collect data without previous theoretical studies. Eisenhardt (1989) stresses the importance of starting out with a clean theoretical slate, even though she says it is impossible, since we all have our theoretical "luggage", our practical experience and our biases. I have attempted to be as conscious as possible of the biases I, as a researcher, bring into the study. A literature review has been conducted previous to, during, and after data collection. Rather than gathering data according to a predefined list, I have attempted to

interpret situations as I have understood that my informants have experienced them or as I have experienced them. The analysis consists of a description and exploration of the case, and the goal has been conceptualizing rather than measuring and generalizing. I did not start out with a specific theoretical hypothesis, but rather allowed the empirical field to lead the way.

Before I turn to the practicalities of conducting the research, I will comment on the scientific point of departure for the methodological choices made.

4.1 Scientific positioning

In this chapter I aim to give an account of the scientific and philosophic deliberations I have had in this process, and what I have leaned on for the methodological and theoretical choices I have made. In a business school context, these issues are often either taken for granted or they are omitted all together. This is also reflected in the training (or vice versa), and has been an issue much debated recently (Ghoshal, 2005). It has been important for me to display some of the assumptions I have about research, and I have worked to achieve consistency between scientific positioning, methodological approach and theoretical framework.

I have searched for production of "a believable or plausible account or story rather than a single depiction of the truth" (Johnsen, 1998:140), which implies that I have a social constructionist view on knowledge. This means that "knowledge is not objective but exists subjectively and inter-subjectively through people's interactions, through working together, sharing knowledge, respect and trust" (Bate & Robert, 2002:648). Social constructionism is a part of the theoretical paradigm called the Symbolic Interpretive perspective, and is also a part of one of the schools within systems theory (Flood, 2001).

The idea of reality as socially constructed originates from the book *The Social Construction of Reality* in 1966, written by Peter Berger and Thomas Luckmann (Hatch, 1997). They claim that human social order is produced through interpersonal interaction. This order is maintained through consensus of how things are perceived and what they mean. Patterns of sense-making are constructed through interpretation (Hatch, 1997). From the social constructionist perspective, all human "knowledge" is developed, transmitted and maintained in social situations.

Asserting a social constructionist approach implies that I do not attempt, nor do I think it possible, to give an objective representation of my observations and of the interaction that I, as a researcher, have with the field. The

positivistic and the constructionist approaches are opposites in the way they consider the social phenomena that researchers are out to investigate. The positivists see these phenomena as having an independent existence of how and when we view them, and they remain as such long enough to be measured. The constructionist view does not acknowledge this objective existence, but rather sees concepts and definitions as constantly changing due to how they are interpreted by individuals. This research focuses on interpreting what people do, what their intentions are and how they do what they do (Ringdal, 2001).

The argument of relativism is often used against the social constructionist approach. "It might appear at first glance that social constructionism must be inherently and exclusively relativist" (Nightingale & Cromby, 1999:6). This is "the problem of relativism", which points to the situation where we are left with no notion of *truth* – things are only real to the extent that discourses exist which describe them. The question of finding the truth or of finding several truths to be equally valid (Burr, 1995), does not differ largely in practical research. A social constructivist will understand "another version of the truth", or for instance an opponent's view, considering the context (Kjørup, 2001). Likewise, positivist researchers will, while drawing inference from measurements and gain or not gain support for their hypotheses, base their hypotheses and analysis on a specified context (Froestad, Solvang, & Söder, 2000) and on biased interpretations.

All approaches to research raise the question of causality, because it is too simple to claim that causality only belongs to positivism (Kvernbekk, 1996). Consequently, this question is complicated no matter what scientific or methodological approach we choose. Since causality has usually been seen as part of the positivistic and quantitative approach, it has not been "politically correct" to speak of causality within for example, a social constructionist approach. A case study, as the present, cannot be used to confirm a causal connection since there will always be a chance that the effect has different causes from the one investigated. I have, however, found it hard to avoid inferences tinted by a causal way of thinking, and the question I have struggled with is whether I, in doing so, am influenced by a positivistic way of inferring and thereby on a collision course with my own scientific position. This has led me to investigate the relation between positivism and causality closer. Kvernbekk (1996) asserts that one of the underlying assumption in the classical way of perceiving causality requires that causality is universal, in the meaning that "if a, then always b" (Kvernbekk 1996:40). This is also problematic for positivistic research, since, as we know, causality is usually inferred from correlations (and theory). It may only be possible to infer causality, as in classical experiments, from proving the existence of time order (i.e. X before Y),

association (i.e. correlation) and absence of spurious causality (i.e. third variables). However, this may be a simplification since we also have to take into account elements such as theory i.e. explanation (Sutton and Staw 1995) and the question of sufficient and/or necessary causes.

Kvernbekk (1996) introduces (with reference to John Stuart Mills) alternative terms for causality, namely necessary and/or sufficient causality. From this we can derive that a prerequisite for determining a cause can be to view it as a necessary cause, even if it is not sufficient. This is interesting for a case study like the one at hand, since a necessary term is more likely to be identified even though, the context and complexity taken into account, it cannot be said to be sufficient. In social science, as in the study at hand, the context will be complex, and in a case study it is often a point in itself not to radically reduce this complexity for the purpose of studying it since that will decrease the contextualization. In adopting the necessary and sufficient causality concepts, the contextualization will still allow us to infer necessary, if not sufficient, causal relations.

In the chapter above, I have given some clues to my scientific positioning. However, just as different theoreticians operate with different classifications of paradigms and perspectives (Hatch, 1997), I have struggled to be consistent in the theoretical and methodological choices accordingly; to which I turn now; to give an account of how I designed this study.

4.2 Research strategy and design

In this chapter I aim to give and account of the research design. I will discuss the choice of case study design and describe how the actual context for the study was chosen. The case study approach is not merely a data collection technique nor simply a research design, but a research strategy (Yin, 2003). Therefore, I start by substantiating why a case study was chosen, and then move on to elaborate on what a case study might encompass.

The main research question in this study is: Where and how does learning and knowledge creation take place within different units in a hospital?, with the following sub-research questions: i) What characterizes the strategy for knowledge management in a hospital?, ii) Where are the opportunities for learning and knowledge creation in a hospital and how do they differ between different units? and iii) In what way are the opportunities for learning and knowledge creation obstructed in the different units of a hospital? Since my research-questions point in the direction of a *How-question*, a case study or an experiment would be preferable (Yin, 2003). I do not consider experiment as relevant as I would not be able to meet the

demand on *control over the behavioural events* (Yin, 2003), which leaves me with a case study.

A case study is useful in exploring new and/or emerging processes or behaviours and when the phenomenon under study is informal (Hartley, 2004). Learning and knowledge creation during work are processes and interactions which often happen so close to and so intertwined with the daily tasks and routines, that the employees are seldom aware of them. Further, what causes the absence of these processes is even harder to identify. These phenomena are context specific to a very high degree, and can be identified in stories told from practice, associations made and metaphors suggested (Nonaka 1994).

"A case study consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context" (Hartley, 2004:323). This wide definition or description illustrates the wide range of studies that fit the label case study. The detailing level and the contextualization are of importance, and the approach is similar regardless of level of unit of analysis or number of cases, namely "generally inductive analysis focusing on processes in their social context" (Hartley, 2004:323).

Hartley insists that a case study is not a method but a research strategy. Within this research strategy a number of methods may be applied, but the choice of method does not define the case study – it must be defined through its theoretical orientation (Hartley, 2004). The theory, even when studied during and after data collection as in this study, is used to make sense of the data. Theory provides both the particularities of the case studied and the general interest and relevance of the case. The role of theory and the advice to focus on few phenomena from the beginning (Hartley, 2004; Miles & Huberman, 1994; Yin, 2003) appear to be contradictory to the explorative and inductive approach. And this is indeed a balancing act. A firm and rigorous approach to the research design (Hartley, 2004) can be a threat to the open mind necessary for interception of emergent issues. My approach has been to be very open in my approximation to the field. This has secured the openness for emergent issues, but has cost me penalty loops later when I had to focus on the principal findings, as in this presentation.

A case study is applied because the issues under study are processes very much linked to their contexts. Secondly, the complexity of the case makes the study unfit for a cross-sectional questionnaire; there are too many "variables" for the number of observations made (Hartley, 2004:324). Thirdly, even in an interview situation and a direct observation situation, it is difficult to observe and ask questions on this topic. The informants are often unaware of and often only unconsciously learning and sharing knowledge. It

is difficult to imagine straight forward questions on a questionnaire on this topic. The danger of misunderstandings and the difficulty in constructing measurement scales would be great.

4.2.1 Case study

Miles and Huberman define a case as "a phenomenon of some sort occurring in a bounded context" (1994:25), which means that the case is the unit of analysis. As I discuss below, the unit of analysis in this study remains fuzzy. 'Interactions during work' is the unit of analysis, and although it can be difficult to draw the borders, there is more than one under study; hence multiple cases within the single organization studied.

Eisenhardt (1989) particularly mentions two weaknesses to the case study approach. The first is the temptation to build theory which tries to capture everything (Eisenhardt, 1989). This is one of the paradoxes of the method. In applying a holistic and interpretive method, and a theory and a scientific position that emphasizes contextualization, there is still need for reductionism in order to arrive at a contribution. The other weakness is related to the same issue; the researcher might have difficulty raising the level of generality of the theory or the concepts (Eisenhardt, 1989). Refreshingly, Siggelkow (2007) argues that although the generalization problem is present in a case study, the case study approach has three important uses: motivation, inspiration and illustration (Siggelkow, 2007:21). It can be used, for instance, to question theory, as for example I do in pointing out taken for granted elements in the community of practice framework, and this can motivate further research. It is obvious that an explorative case study serves as inspiration when issues emerge from the data material. And lastly, the use as illustration is not just cake icing, it is a pedagogical necessity, for instance for illustration of underlying assumptions (Siggelkow, 2007).

A multiple-case design is regarded by many as more robust than the single-case design (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Hartley, 2004; Miles & Huberman, 1994). Siggelkow argues however that a single case can be a very powerful example (Siggelkow, 2007), and the degree of data-depth is likely to suffer in a multiple case study (Dyer & Wilkins, 1991). In this study the threat of shallow or superficial data is met by the fact that the cases are within the same organizational context.

I have studied four units with pertaining interactions. Considering the research question, it could have been interesting to conduct a comparative study of several organizations. However, in order to conduct an in-depth study like this present study, several organizational contexts would have

been too voluminous for one researcher within the time-span given for this project. Choosing four units within an organization makes it possible to develop contrasts within the case, and this is an alternative to comparative case studies (Hartley, 2004) and these contrasts contribute to better understand the phenomenon under study. This has been part of my strategy when I have picked four very different units within the hospital for this study. In addition to exploring where and how learning and knowledge creation takes place in the organization, I also focus on the contrast between how knowledge is shared and developed in medical wards compared to support staffs. The units are theoretically sampled and can be fitted in a selection frame that contrasts them along two dimensions: OLD-NEW premises, and CLOSE TO/DISTANT FROM core activity.

Table 4-1: Selection frame – units under study

	Old premises	**New premises**
Core departments		
Support departments		

Yin (2003) makes a division between a holistic and an embedded case study. This is connected to the unit of analysis, which is either single (holistic) or plural (embedded). If I had chosen to examine the organization under study with sole focus on the global nature of the organization, it would have been a holistic approach (Yin, 2003). This is a study of the organization, but also of subunits within the organization and even of interactions within and across these subunits, and individuals within these interactions. This is therefore an embedded case study. One of the problems of an embedded approach is to balance between the different levels. I have met this threat by explicitly also describing and analyzing data on an organizational level, in addition to the level of the interaction.

Yin (2003) offers two pieces of advice in the selection of cases for a study. This advice is about: the number of cases and whether you should choose a closed or flexible design. I have already argued for a flexible design, and in the next chapter, I give an account of how the context and cases for the study was chosen.

4.2.2 Selection of context

The outcome of this study largely depends on the empirical field to furnish an interesting research ground, and this chapter aims at giving an account of the considerations I have taken into account in choosing the context for this study.

My aim has been to study learning and knowledge creation in a company that holds knowledge as an important resource and learning and knowledge creation as important processes. I was, however, not looking for a "typical" knowledge intensive company, like law firms, ICT companies, consulting firms etc., small or with relatively small R&D units (Empson, 2001; Løwendahl, 1997; Sveiby & Risling, 1986). I was looking for an enterprise with both manual production units and high level of knowledge intensity, and with a heterogeneous staff as far as professional and occupational background was concerned.

In interpretive case studies, the goal will be to build theory, develop concepts, fill theoretical categories or replicate previous case studies (Eisenhardt, 1989). In this specific case, the goal is to develop concepts with the objective of filling theoretical categories from a specific setting, and for this purpose a hospital was purposefully and theoretically sampled, rather than for statistical reasons (Eisenhardt, 1989; Miles & Huberman, 1994). The hospital had labelled itself "a learning organization" and this triggered my interest. It was also chosen because it is a knowledge intensive organization *and* a skills-intensive organization (Moumtzoglou, 2003). The fact that it is a hospital and a public sector organization was not decisive. It is only of instrumental interest (Hartley, 2004), and not interesting because of its particular features as a hospital. It is a hierarchical and rule and procedure based organization, and in this aspect, is unlike the "classical" knowledge intensive organizations frequently under study in this field. In some functions and wards the knowledge intensity is very high, for example among the midwives in the maternity ward, while it is low in the kitchen staff and in other support departments. This means that there are large internal contrasts.

The actual access to the field was obtained through personal connections with an employee in the hospital. He also became my key informant. The wards and departments were selected: Two hospital wards, one in the old building: the maternity and gynaecology ward, and one in the new clinic: a cardiac ward. Further, two support staff units were selected, receptionists and kitchen staff. They were theoretically sampled to form a contrast, and the criteria were as mentioned above; distance to the core activities.

Table 4-2: Units under study

	Old premises	**New premises**
Core departments	• *Maternity/gynecology ward*	• *Cardiac ward*
Support departments	• *Ward kitchen staff, Maternity/gyneacology ward*	• *Receptionists* • *Ward kitchen staff*

Having described the choice of research design and field in this chapter, I continue in the following chapter with a description of the methods for data collection that I utilized and the challenges I encountered in this process. I also account for the selection of informants for the interviews, which constituted the main means of data collection.

4.3 Data collection

A case study allows several methods of data collection (Yin, 2003), and although I had creative ideas as I started out the study, I ended up with the classical model of interviews, observation and document studies. At the beginning of the study I had planned to use focus groups in addition to interviews as a data collection method. This method would fit the theory of knowing as a process and social learning theory. Not only would there be a learning and knowledge creation process between the researcher and the informant, but the informants in a focus group would also reflect collectively. I thought that this would increase the understanding of the phenomenon under study. I discussed and planned this with the hospital, but I never managed to go through with it. This was partly due to lack of enthusiasm for time consuming group interviews on the hospital side, and partly due to lack of courage for insisting on focus groups on my part.

In this study I have combined multiple data collection methods; more specifically interviews, observation and archival sources. Each of these data sources adds a different angle and aspect to the study, and data triangulation provides stronger substantiation of the findings (Eisenhardt, 1989). From previous experience (Nilsen, 2002), I know that the data to be collected here is embedded and can be difficult to retrieve. This can be partly because meta-knowledge about learning and knowledge creation is often tacit, and partly because the respondents have only a low degree of awareness about these matters.

Since the moments of learning are short-lived and transient, how can they be studied? Weick and Westley recommend that researchers look for "uncommon and inconspicuous events, not large scale training programs and

change programs. The methodological challenge is to look for moments of "*almost* business as usual", and look for "the complex message implicit in the juxtaposition of order and disorder that precedes learning" (Weick & Westley, 1996:451). We can see narratives as sense-making devices in practice as Patriotta does: "Narratives show how knowledge in organizations is mobilized through discourse, and therefore highlight a distinctive mode of knowing related to the everyday coping with the world" (Patriotta, 2003:353). Narratives can also work in this way when used in an interview situation, which is discussed in the next chapter.

4.3.1 Interviews and selection of informants

The study focuses on the meaning of a particular phenomenon to the participants, individual perceptions of the phenomena, and processes tied to these phenomena (Cassel & Symon, 1994). I chose to use the qualitative research interview as the main form of data collection method. The interviews were long (1-2 hours) and open-ended, inspired by narration or "storytelling", which means that stories and experiences from actual projects or occurrences were shared with the researcher. An interview guide is to be found in Appendix 1. In these long open-ended interviews, the research can actually be a part of the knowledge creation processes itself, and not solely data gathering (Denzin & Lincoln, 1994).

Czarniawska (1998) uses a methodology that she calls *narrative interviews*. Narrative interviews are chronological relations of events that occurred under a specified period of time. Narrative interviews have a very open approach, and the way to start them can be tricky. Usually it can be difficult to start with very open and general questions of "What is going on around here?" A certain level of confidence and trust is needed, and narrative interviews can for example follow a more thematically focused interview. These interviews relate actual, not generalized, events such as "How do you make decisions?" Or hypothetical events such as "What would you do if…?" (Czarniawska 1998:29). In the interviews I used this approach when I asked the informants to tell me about a specific day at work (yesterday – or the last time they were at work). Through an open approach as an interviewer and researcher, I encouraged the informants to tell the story of their workday, starting in the morning and guiding me through their day. Instead of giving a detailed account of the subject of the research project and the purpose of the interview, I would ask questions along the way that related to the phenomena, sometimes interrupting and follow up on the topics that they mentioned; topics that were relevant to the research question.

How the researcher chooses to form her role will have implications for the knowledge creation process in the interview, and the researcher's scientific

approach will influence the choice of roles. If the researcher chooses to go into an interactive role and introduce, or offer, her own knowledge and interpretations directly in the situation, the outcome will be quite different from a situation where she keeps her thoughts to herself. In this study I have viewed the interview situation as a mutual knowledge creation process rather than a situation where *one* is strictly the interviewer and *the other* is strictly the one who supplies the information. This differs from a situation where the researcher places herself in a more neutral role, as required in a positivistic research perspective, and the mutual knowledge creation process indicates a different power structure in the relation (Altern & Holtedahl, 1996).

Interviewing is interaction. The long open-ended interview does not call for the interviewer (researcher) to play a neutral role. The active role of the inquirer/researcher in dialogue with the informant will help build conditions that are necessary for knowledge creation to take place parallel to data collection. Both the researcher and the informant will have their knowledge changed and developed through the interaction. Boje (1991) makes a point of the fact that the same story comes out in different versions depending on the audience and the context. These versions will also vary as to how complete the story is and the amount of detail included. "Only in the rare instance in which the storyteller is faced with a researcher or a new applicant is he or she likely to tell the whole story, since much of the detail cannot be safely assumed to be re-creatable in the novice's imagination (Boje 1991:110). If the informant views the researcher as "an equal" or at least as someone who has a personalized role, the climate for learning and knowledge creation is improved. The methods, the scientific platform and the research topic are intertwined; they invoke one another (Yanow, 2006).

One of these conditions is how the researcher decides to present herself, visually as well as emotionally and intellectually. One of the classical misunderstandings within management and organizational research is that the researcher is considered to be spying for the management (Fontana & Frey, 1994). In this study, this threat was met by using time and warming up the informants through talking about daily activities, a topic on which they were experts. Through this approach, I attempted to build swift trust (Meyerson, Weick, & Kramer, 1996). I have perceived that it has been an advantage to be an outsider in the health care field. I always made that clear at an early stage, and it permitted me to ask "stupid" questions. This however, is a balancing act. It was equally important that I had acquired *some* knowledge through my hours of observation in order to have some overlapping knowledge or knowledge redundancy (Nonaka, 1994) as a base. Sometimes it can be a question of introducing the theoretical vocabulary in the conversation. The theoretical categories and constructs may be unknown to the informant, and the there is a question of how the informant will react

to the introduction of new concepts. In a context where we are studying phenomena that are partly tacit and we can assume that the level of consciousness about them are low, these concepts may help the informants see these phenomena in their own context. If they are explained and exemplified, they can function as metaphors or analogies and trigger the process that helps the informant make their knowledge explicit. On the other hand, new and theoretical concepts can confuse the informants and make them insecure. Depending on which approach I chose, I experienced two types of reaction:

1) When the informants received scarce information on the topic, they would start to wonder what all this was about and would often become a little sceptical.
2) If they received more information, they would sometimes become very coloured by this when they spoke. They would start thinking about these connections instead of freely telling me their story of their work day.

There were naturally great individual differences due to a number of factors, and I ended up sharing information about the research project to a varying degree based on a gut-feeling about the specific informant that I was talking to.

A mixture of help from the key informant, who was a consultant in the ICT and training department, my own curiosity and snowball sampling, was used to identify interviewees. In order to complete the picture of learning and knowledge creation during work, I asked to interview employees on all levels on the wards. In total, 18 interviews were completed in the course of 18 months; most of them conducted within a period of six months. The interviews lasted on an average 1.5 hours.

The informants were chosen to maximize diversity with regard to
● difference in knowledge intensity
● distance to core activity in their jobs
in order to reveal possible contrasts or similarities, and capture the range of diversity in how knowledge is shared and created along these dimensions.

These selection criteria were theoretically derived. Since the different employee groups or wards are within the same organization and subject to the same management and strategies, there is a point in demonstrating exactly this – namely the differences. The informants were distributed in the following way in the various units:

Table 4-3: Informants distributed on units

Number of informants	Unit under study
5	Maternity and gyneacology ward
3	Cardiac ward
2	Receptionists
4	Kitchen staff
4	Misc. (managers, ICT and training dept.)

The interviews were all, with one exception, held in the hospital and usually in meeting rooms or on an empty ward (one of the wards in the new clinic was not yet in operation in this period). The managers were interviewed in their offices. A fair amount of the interviews were interrupted several times, either due to double-booking of the room or because the informant was needed in an urgent matter. Interviews were conducted with employees in two different wards and in three different support departments. One of these support departments was the ICT and training department. Data from this department was used for identifying the strategy for knowledge management and this data was used as a backcloth for the other interviews. In addition, two top managers were interviewed. All the interviews were taped and transcribed verbatim. Additional informal conversations were not recorded, nor transcribed.

4.3.2 Sites of observation

During my observation in different situations and parts of the hospital, I came to question Styhre's (2003) call for ethnographic studies as "the main methodology for creating an understanding of how knowledge is used in practice", or rather question the feasibility of the approach. The reason for this is that observation is an extremely time-consuming and, at times, boring affair. This particularly applies to observation of practice itself, of real life in real time; most of the time nothing happens. However, it should be underscored that this observation provided valuable data that has made an important contribution to the analysis and understanding of the context.

My observation covered three types of situations:

1. Non-participant observation in meetings, project work and report. The participants in the meetings were aware of my presence, and not always aware of the purpose. It is therefore likely that they were unsure of the reason for my presence and that it did inhibit them to some small extent.

2. Observation during training. This was a semi-participant observation. I could ask questions (although I rarely did), and I did speak to the participants during breaks.
3. Observation as a "fly on the wall" in various places, like the reception and the lounge in the cardiac ward. This was non-participant, although the receptionist did speak to me once in a while, pitying me. I truly felt like the researcher in the movie "Kitchen studies" (Hamer, 2003), especially recognizing the fact that "nothing happens". This was a lesson in what observation can be all about, time consuming and boring, but still worthwhile.

Observation of the training in the new clinic and the meetings in the management group were mostly carried through to set up the back cloth for the study. I needed this introduction to the hospital vocabulary and to the local jargon in order to be able to conduct the interviews. This was very important, since I had no background or experience from hospitals, except for very brief experiences as a patient (and only once at this particular hospital decades ago). The hospital was not selected as a part of studies on hospitals in particular, but it was nonetheless necessary to be able to understand some of the terminology in order to be taken seriously as an interviewer by the informants. Through these hours with introduction to routines and work procedures in the new hospital, my level of knowledge redundancy (Nonaka, 1994) with the informants increased and in addition I acquired insight in the strategy for knowledge management. The interviews with the manager of the clinic and the internal consultants in the ICT and training department gave me insight in these same issues.

4.3.3 Document studies

A large number of minutes from meetings, strategy documents, handbooks, procedure descriptions, press clippings, documents from the hospital's homepage have been studied, along with field notes. This material was not transcribed and coded. A list of these documents is omitted due to confidentiality on the part of the organization studied.

Having accounted for the data collection methods used, in the following, I reflect on how the collected data was analyzed.

4.4 Strategy for data analysis

Qualitative data are rich and thick and there is no ONE strategy for analyzing qualitative data that researchers agree upon. In the following chapter, I describe how I have been inspired by several methods and lines of

action in finding my way through the data wilderness, with data overload lurking in the corner.

A natural progression in the analysis was to first give an account of the data, then through locating key constructs and formalizing the elements, construct "a map". Inspired by Grounded theory, I attempted to "discover regularities through the categorization of elements and the exploration of their connections" (Dainty, Bagilhole, & Neale, 2000; Glaser & Strauss, 1967). I started by linking descriptive and interpretive codes to my data material and worked on an understanding of the connections between the codes and categories, and the goal was to end up with a theoretical interpretation (Dainty et al., 2000). I identified themes and trends connected to my research question – and to emerging issues, but did not, however, utilize a strict coding paradigm as prescribed by Glaser and Strauss (1967). The aim is not to promote consistency in terms, but rather to uncover diversity in order to better understand the phenomena under study (Miles & Huberman, 1994).

In this chapter, I discuss issues of importance in the actual analysis of the data. This includes pinning down the unit of analysis in the study; discussing the role of theory, and the analysis process itself.

4.4.1 Unit of analysis

Defining the unit of analysis is related to defining what a case is (Yin, 2003), and it should be related to how you define your research questions. As I elaborate on in this chapter – this is easier said than done.

Easterby-Smith et al. (2000) refer to "the debate on unit of analysis" as one of the early debates within the field of organizational learning (Easterby-Smith et al., 2000). This debate concerned system theoretical issues like whether "organizational learning was simply the sum of what individuals learn within organizations" (2000:785), or whether this added up to more than the sum. They further point out that the meso level, the group, has taken a leading role as the unit of analysis. Very recently, however, there is sign of new life in this old debate, for instance in *Organization*, January 2007.

It is inherent in the qualitative research approach that the context of the case under study is taken into account (Langley, 1999). This contextualization complicates the task of defining the unit of analysis, and whether there is *one* unit of analysis (holistic), or several (embedded) (Yin, 2003). Learning and knowledge creation in different units in an organization is under study. The learning in itself as the unit of analysis is difficult to divide into levels, since knowledge circulates in between and among different levels (Gherardi, 2001).

The concepts from the theory applied are fluid to varying degrees and also sometimes overlap, and they spread out over time and space, hence the unit of analysis is difficult to isolate (Langley, 1999). The unit of analysis is the meso level in the hospital. This remains fuzzy, since the borders are difficult to set. The interactions can be vertical or horizontal/occupational; they *can* be identical with a department or another type of organizational unit. They are subunits, and they cover parts of the organizational jigsaw puzzle.

4.4.2 The role of theory

Despite claiming an explorative approach, I have implicit theory, expressed in preconceptions, biases, values and frames, and even explicit theory in terms of predefined concepts. But the theory and the constructs are not explicit as in a variable-oriented approach with suggested causal relationship between independent and dependent variables (Eisenhardt, 1989; Miles & Huberman, 1994). I acknowledge that these a priori constructs, as well as the research questions, are tentative (Eisenhardt, 1989).

This study is designed to explore a new area and contribute to development of theory or concepts, NOT to confirm existing theories. Therefore, even though I have performed a theory study before I collected data, I have mainly used a *theory after* approach (Wolcott, 1992). Literature was utilized to develop an understanding, where some literature was studied ante-analysis and some applied on the basis of early empirical reflections and findings (McCracken, 2004). However, I have chosen to integrate the theory studied *after* and *during* data collection and analysis in the theory chapter, along with the theory studied a priori that proved to be relevant. This has been done to ease the reading of the dissertation. The disadvantage is that which is which has become invisible. This is however of minor importance given that the main purpose of the study is to better understand.

I have not leaned on a grand theory, merely concepts from a field; a field that is constantly growing and becoming more dispersed. The way I have described the case will also lead to the interpretation of the case, since a case can be described in many different ways.

4.4.3 Analysis

As I mentioned introductorily in this chapter, the approach to the analysis has been inspired by several sources: Miles and Huberman (1994), who insist that we need explicit, systematic methods in qualitative research and data analysis, by Glaser and Strauss and Grounded theory (Glaser & Strauss, 1967), who go even further in their concrete description of method, and,

pulling in the other direction, by Czarniawska and ethno methodological approaches, grounded in a constructivist approach (Czarniawska, 2003).

Miles and Huberman (1994) promote three categories of approaches to qualitative data analysis: Interpretive, social anthropological and collaborative social research. Similar to my theoretical approach, I have had an eclectic approach. I interpreted the data, and to a certain extent I view the interviews as data jointly constructed by the informant and the researcher, in a social-constructivist vein. I have not made an attempt to be the researcher that tries to be objective and hold back. This is in line with the notion of a collaborative social researcher, but still far from practicing action research. (The organization studied has, however, been interested in ongoing results and end-results, and has since the initial contact, been conscious about asking: "What is in it for us?")

I have followed Miles and Huberman (1994:9, somewhat paraphrased) systematically in:

1. Affixing codes to field notes, archival material and transcriptions made from interviews
2. Noting reflections and remarks in a separate document while transcribing
3. Sorting and sifting through these materials to identify similar phrases, relationships between variables, patterns, themes, distinct differences between subgroups
4. Gradually elaborating a small set of generalizations
5. Confronting those generalizations with a formalized body of knowledge in the form of constructs or theories

I have coded and reduced data, aided by a computer software program. This is not in the interpretative vein, rather in the ethnographic. The choices that have to be made as to what to leave out and what to emphasize constitute a task of uncovering patterns and explicating these and in this manner contribute to further development of theory (Miles and Huberman 1994:8). In this approach I have been inspired by grounded theory's *Constant Comparative Method* (Glaser & Strauss, 1967). The constant comparative method is a method of joint coding and analysis, and the purpose is to generate theory. As opposed to coding all the data first and then doing the analysis, the constant comparative method meets the threat of de-contextualizing the data through going in and out of the analysis process. While using the constant comparative method, not all the data is coded, and "The method is concerned with generating and plausibly suggesting (but not provisionally testing) many categories, properties, and hypotheses about general problems" (Glaser & Strauss, 1967:104). The constant comparative method consists of four stages: 1) comparing incidents applicable to each

category, 2) integrating categories and their properties, 3) delimiting the theory, and 4) writing the theory (Glaser & Strauss, 1967:105).

Prior to the analysis I drew up a list of codes in eight different categories. They were partly derived from the process of transcription, partly from a categorization offered by the OLM framework (Lipshitz, Popper, & Friedman, 2002) – to which I added three more categories. This was inspired by the a priori theory studies and elaboration on the research question. At this point the codes were mainly descriptive, and with this I started out the coding process. My intention was to create the interpretive codes in the actual process of coding.

In the actual coding process, I did not directly use the codes from the different categories mentioned above. In order for the categories to arise from the data, albeit keeping the a priori list in mind, I created codes which in language were more similar to the language used by the informants. The master code list ended up as a mixture of emerging and semi emerging codes. The advantage with this technique is that it is easier to discover novelties in the data as compared to the theoretically derived codes, and it keeps the analysis closer to the data. The disadvantage is that it is also easier to lose the overview and to create codes that are too similar to each other.

After the initial coding, I went back to the notes I made while transcribing the interviews, and added some codes accordingly. After finishing this second round of coding, I did more archival studies of minutes, field notes, strategic documents etc. and did some recoding according to this data. The next operation was to compare the reports generated from the codified material with the category framework that I had prepared before the coding with the purpose of discovering similarities and divergence – along the search for patterns in the coded material.

I have not been totally faithful to the constant comparative method. When I transcribed the data, I made a list of codes parallel to this work and a separate document for comments. When I coded the interviews and some other documents, I used a computer aided software program called HyperResearch, and this coding was not always done in a constant comparative manner. One of the advantages that a computer software-coding program has to offer is exactly this capacity to report on excerpts under the same and related codes in a way that makes it easier to make the comparison. I am, however, aware of at least two processes that may be in danger of getting lost during the early coding and analysis. Those are 1) the capturing of the association and reflection that comes as the coding is performed and 2) the comparing to what has been labelled the same way before, which Glaser and Strauss say can be based on memory (Glaser & Strauss, 1967). I

tried to capture the first process by making notes in a separate document. And the latter was seen to be aided by the report generator in the computer aided software program. This also means that the software helped me with my memory, which in this situation with vast amount of data, came in handy. I also coded and wrote memos on my field notes and on parts of the archival data (Glaser & Strauss, 1967), which is an iterative process in itself, since the field notes contain reflections and ideas that I got while doing the observation.

Qualitative data are rich and contextual. Through data reduction, context is in danger of being lost or detached. I met this threat by hermeneutically moving in and out of the full text, back and forth from the reduced material to the full transcription. Although very tempting, I have attempted to avoid quantifying through data reduction. After the analysis I did further studies of contextual factors, such as external pressures to institutionalize managerialism in health care through New Public Management, and the national organization of the health sector. This was to ensure sufficient contextualization.

Use of matrices

I have used matrices to support the analysis and some are displayed in chapter 6.6 and chapter 7. These matrices are a mix of descriptive and interpretive matrices and thus serve different purposes. Entering qualitative data into a matrix represents an additional data reduction and I constructed the matrices after having worked with the thick descriptions at length.

This research project ends up stating a number of propositions for further research, and these propositions emerge from the discussion of the findings. I have chosen to use propositions since the research has been of explorative nature (Arbnor & Bjerke, 1994), and the propositions emerge as a result of the research and not prior to the empirical work.

In the chapter above I have attempted to give a detailed account of the analysis process in this study. The analysis in qualitative studies has often been labelled “the black box of qualitative research”; this attempt to open up my black box is also an attempt to enhance the credibility of the study. In the next chapter, I elaborate on just this in addition to threats to the validity of the study.

4.5 Validity and reliability

Meeting the threats to validity and reliability is seen as part of the research design and the aim is to answer the question of why we should believe the

results and findings in a study such as this (Maxwell, 2005).The aim for this chapter is to clarify what measures I have taken to meet these threats to the validity of this study.

Qualitative researchers have handled the question of reliability and validity in different ways. Either they attempt to apply the same frameworks as in quantitative research, or, they tend to ignore these questions altogether. Still others have introduced alternative terms which they think fit better with qualitative research (Kvale, 1995). I have used a checklist of strategies to meet the threat, provided by Maxwell (2005). I will return to the items on the checklist after I delve into the issue of objectivity and subjectivity.

Validity is about credibility and not about objectivity, but objectivity is also about credibility. My aim has not been to be objective, since I do not render that possible. On the contrary, as a researcher it is essential to reveal your possible biases and make your choices quite clear. This has been my attempt, including having an open mind to emerging issues. During the study, I have continuously searched for data that could possibly contradict preliminary findings, and I have discussed the same findings with my key informant. I did not have any previous knowledge of hospitals, and this has aided me in my open approach. At the same time, we all have our biases and I have tried to be conscious of them and reflect on them on the way. The researcher's role in qualitative research is pronounced and visible, and therefore the biases and the conduct of the researcher are of importance to the whole research process and to the outcome. Miles and Huberman (1994) advice to ensure openness on biases and the possible influence on the study by the researcher, is (among others) to describe processes in detail and for the researcher to be aware of this threat. I have provided a detailed description of the procedures in this study and in the chapter on data collection (chapter 4.3) and I have included reflections on the role of myself as a researcher and how this might have influenced the context in different situations.

Validity, according to Maxwell (2005) "consists of the strategies you use to identify and try to rule out these threats" (p.104). The strategies Maxwell suggests for meeting the threats to validity consist of eight items: Intensive, long term involvement, "rich" data, respondent validation, intervention, search for discrepant evidence and negative cases, triangulation, quasi-statistics and comparison. I go through these items below, and in addition, I comment on external validity in particular.

I have had a long term involvement in the context of this study, more specifically during 18 months. I spent a considerable amount of time in the organization, and even wore a uniform at times. I had repeated interviews with my key informant, and observed different settings like meetings and

training situations for background. This was to ensure rich data, and different kinds of data, since that can help rule out spurious associations and premature theory (Maxwell, 2005:110).

Long, open ended interviews, transcribed verbatim, and many hours of observation contributed to rich data. At the time of writing up this presentation, data and conclusions have not been presented to the informants. I have presented them with the quotes that I would like to use, but these quotes were taken out of context (dissertation) for this purpose of presenting them to the informants. At one point I have presented findings from this study to the managers of the whole organization under study, and this meant that I entered into a respondent-validation-like situation. The nature of the response from the managers and the limited time has not permitted a direct incorporation in the dissertation, but this can be done in the future and will increase the validity of the findings. There are several reasons why I have not performed further respondent validation so far. First of all, it is time consuming, both to locate the informants (several of them have moved on by now), and to speak to them again. Secondly, my experience from previous studies is that informants sometimes use this opportunity to rewrite their versions. This is of interest of course, but it can grow into a "new study" and with the time at hand this would not be doable.

Intervention has not been a relevant strategy for this study, although the discussions and the mutual learning and knowledge creation that took place during the interviews can be seen as a mild form of intervention. Searching for discrepant evidence and negative cases has happened during every part of the study, through a rigorous examination of both supporting and discrepant data (Maxwell, 2005:112), and through reporting important contradictory findings. Triangulation reduces the risk of systematic bias due to a specific method (Maxwell, 2005). I have used several data collection methods, namely interviews, observation and document studies, but not different research methods. Method triangulation must be seen as an ideal and has not been possible within the frame at hand here. Likewise, quasi-statistics, or making use of possible quantitative components in the data has not been relevant in this study.

The last item on the list, however, comparison, has been met by studying several units within the hospital which has amounted to several cases. Since the study took place during a radical period of change in the organization, it was natural for the informants to compare the situation *now* to the situation *before*, which is a comparison that has become important in this presentation.

External validity is about generalization, and should be handled cautiously. In applying a holistic view, I have taken into account connections and influencing environments. It is, however, impossible to study "everything", therefore the findings in this study are not *certain* nor representative statistically speaking. In case studies we rely on analytic generalization, which means that the researcher is striving to generalize a particular set of results to some broader theory. In addition, the findings might be transferable, rather than generalized, to comparable contexts (Ness, 2001).

Reliability

The objective of the reliability test is for a researcher to arrive at the same findings and conclusions while conducting the same case study as a researcher before her (Yin, 2003:37). Yin suggests that the researcher should use a case study protocol and develop a case study data base. I have used a protocol throughout the study in order to ensure the credibility, and all the transcribed interviews have been coded electronically in a database using a tool called HyperResearch.

In this study, I am "concerned with generating and plausibly suggesting (but not provisionally testing) many categories and properties. Some of these properties may be causes, but others may be conditions, consequences, dimensions, types, processes etc." (Glaser & Strauss, 1967). The results of this exploration will not be representative of *all* knowledge organizations or hospitals in general.

In this chapter on validity and reliability, I have commented on the threats to reliability and validity, including in depth discussions on causality and objectivity. These subjects are much debated in qualitative approaches to research and it is widely agreed that the concepts used in quantitative research are only partly applicable. I have therefore chosen to comment on validity in a more general way and not connect it to any specific classification of validity.

4.6 Concluding comments on methodology

In this previous chapter I have given an account of how this study was conducted, including some of my reflections and doubts along the way. I ended up with a fairly straight forward design in order to embrace a complex context, a case study. The real challenge and excitement in the study of work, called for by several researchers, is the actual meeting with the research site itself and the people in it. In this meeting, the understanding of data overload and "drowning in data" became more than a theoretical concept. In the following chapter I turn to exactly this – to the empirical context itself.

5 Case introduction

The outcome of this study largely depends on the empirical field to furnish an interesting research ground, and in the previous chapter, I gave an account of the selection criteria and actual selection process of the study context. In this chapter, I present the organization under study. In addition to presenting the hospital in general and briefly contextualizing it, I include a presentation of the four units studied. These units will further be given a detailed presentation of conditions pertaining directly to the research issues in chapter six.

5.1 The context for this study – a hospital in Norway

The context for this study is a hospital in Norway. In 2002, the hospitals within the National Health Service in Norway were transferred from the district county council (fylkeskommunen) as the administrative authority, to the State. The Health Service was divided in geographical regions, each under a regional health administration. The regions and the hospitals are in a competitive situation (even as public hospitals), competing partly with other hospitals for funding from the regional health administration, and competing to attract patients. Patients in Norway are free to choose where to receive treatment, and money from social security will 'follow the patient'. When the patient chooses a hospital outside his or her geographical area, the preferred hospital receives funding according to the nature of the treatment.

In August 2004, I started collecting data from a hospital in Norway. For the purpose of confidentiality, I call it Bell Hospital. This hospital treated close to 11 200 patients in 2005. These patients were admitted to the hospital within surgery, internal medicine, psychiatry, delivery, gynaecology, and children's diseases. In addition, 62 300 out-patients were treated. The hospital had 872 employees (figures from 2005).

The hospital has four clinical departments and a number of non-medical service departments. The service or support departments can be divided into 'directly health-related departments' like the laboratory, and 'departments with weaker links to the core activity', like the kitchen. The hospital has recently opened a new and very modern clinic, the medical-surgical clinic. The majority of the medical somatic activity moved to this new clinic at the time of this study. One large unit remained in the old premises, the maternity/gynaecology department. The main aim of this study is not to compare conditions before and after moving to new premises. Data, through the informants' retrospective reflections, can only *indicate* how conditions

were different before the move to the new clinic. However, since architecture and physical layout emerge as issues on knowledge management; a presentation of the present situation in relation to the physical layout is relevant.

The figure below shows the lay-out of one of the floors (out of three) in the new clinic. The building is actually constructed as a slightly deformed Greek cross, with four equally long wings stretching out.

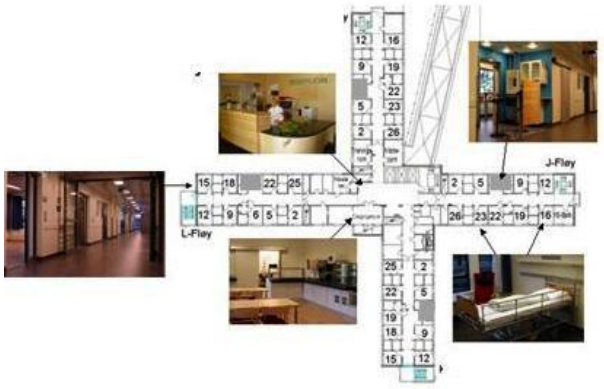

Figure 5-1: Layout of one of the floors in the new clinic

The shared services for each floor are located in the centre, called the middle core. They are the kitchen with dining room, and the reception. Likewise, this is where the common rooms for all four wards, or as they are called in the new vocabulary introduced: the 'yard', are located, among them the reception area, a lounge for the personnel, the ward kitchen and cafeteria, scullery, storage room and treatment rooms etc. Here you will also find the elevators and the entrance to surgery. In each of the wings, there are nine patient rooms, each with an accompanying bathroom. Each wing (which constitutes a ward) has two conference areas for the employees. One is an open area and the other a closed area for sensitive conversations and information exchange. The distance from the end of a wing (ward) to the core is actually about 50 meters (about 55 yards).

The actual move from the old building to the new was planned in detail for the majority of the personnel. There was an extensive training period on site during several months before they actually moved in on 1 November 2004, one month after schedule. I return to this issue below. Parallel to moving to new premises, the hospital reorganized and introduced a process oriented work method based on Patient Focused Redesign (which in its turn is based on Business Process Reengineering), which was originally developed in

Great Britain. This method was adapted for the organization through adjusting methodological material and training process workers. The architecture of the new hospital building and several new supporting materials were constructed and modified to support the new work method. The main idea of the method is to organize the running of the hospital around the main pathological processes, and not vice versa, which traditionally has been to organize the patients around the different wards and departments of the hospital. The new way of organizing the work is slowly being introduced to the whole hospital.

From a knowledge management point of view, the building of the new clinic is of special interest since it breaks with the traditional layout of a hospital ward, but is in many aspects mainstream as to how new hospital buildings in Norway are built. Not only is the layout different, but single-bed-in-patient accommodation for all the patients is also a novelty. The architectural design is minimalistic with single-bed-in-patient accommodation, ward kitchen and cafeteria, and big open spaces. On occupation of the new premises, a completely new vocabulary was introduced which relates both to the architecture, for example "the middle core", and the work method, for example patient focused redesign.

The move to the new clinic coincided with this study and had a great influence on it, especially since the informants were occupied by this great change and ever so often during the interviews compared work before and after the move. The new clinic has represented a major change for the hospital, and has been an effort both economically and organizationally. This coincided with comprehensive, externally initiated, reforms in this part of the public sector, and internally with the introduction of new work methods, and with a strained budget and a strict economic regime. The hospital also changed Managing Director in this period. The new Managing Director was recruited internally.

5.2 The units under study

The four units under study can be divided in two categories. The cardiac ward and the maternity- and gynaecology ward belong to the first category, while the kitchen staff and the receptionists belong to the second. The latter two are non-medical support staffs, while the two former are clinical wards. These particular units were chosen for this study in collaboration with the hospital, and the criteria for choosing them are accounted for in the chapter on methods. During the negotiations with the hospital prior to the study, I asked for a mixture of medical and non-medical units, for the purpose of investigating the differences. I had particularly asked for the receptionists and for the kitchen staff as the non-medical units. This was driven by an

interest to study units in the low end of the hierarchy, since they have received relatively little attention in research in hospitals and research on learning in organizations.

Most of the wards and departments I studied have recently moved to the new clinic. The maternity/gynaecology ward and the ward kitchen on this same ward are situated in the old building, as shown in table 5.1. below:

Table 5-1: Old and new premises - placing the units under study

	Old premises	**New premises**
Core departments	*Maternity ward*	*Cardiac ward*
Support departments	*Kitchen (ward kitchen maternity ward)*	*Reception (middle core), Ward kitchens*

In the following I will supply some details on the four units under study.

The Maternity and Gyneacology ward

The maternity and the gynaecology wards are co-located and co-organized. The maternity part of the ward has approximately 800 births annually. The gynaecology ward has six beds, and has had a low number of patient beds filled lately. On the ward, there are 11 doctors, 26 midwives (21 full-time equivalents, 15 of them work part time) and 17 paediatric nurses (11.5 full-time equivalents, 15 of them work part time). The ward manager is a gynaecologist and the assistant manager is a midwife. There is a management team, consisting of three: the department manager, the assistant manager and a doctor. The ward is situated in the old building in the hospital and has only barely started reorganizing according to the Patient Focused Redesign principles. The ward offers several outpatient services such as a breast-feeding polyclinic, a menopause clinic and an antenatal clinic.

The cardiac ward

The cardiac twin-wards (hereafter the cardiac ward) consist of two small wards with nine single-bed-in-patient accommodations. They are considered as two wards, and the staff has their employment in one of them. They are however organized under one department manager, they have joint morning meetings, and the staff is moved between the two wards if there is a staff shortage. The patients on both wards have heart related deceases. The wards are laid out physically in a very similar manner and this makes it easy for the nurses to move from one ward to another. The ward is part of the new clinic,

which opened on 1 November 2004, and it has 9.25[3] nurses and nurse's aids and 2-3 doctors employed.

The receptionists in the new clinic

The receptionist staff in the new clinic consists of five receptionists, one for each floor and the fourth in the position of secretary for the manager of the clinic. Several of these receptionists have their background as ward secretaries in the old building. In the new clinic, they are organized as their own unit (stab), which is directly supervised by one of the assistant directors in the clinic. When the new clinic was opened, these receptionists were intended to enter an internal rotation system, spending four weeks on each of the "stations" mentioned above. There was a lot of resistance against this organizational model within the group, and this model was not implemented. The receptionist's work site is pictured in the upper left corner in Figure 5.1 above. Their main tasks are receiving patients and the patients' relatives; update the patient journals and odd office tasks.

The ward kitchen staff

In 2005, part of the central kitchen service was de-centralized, and four smaller ward kitchens with connecting dining rooms (hereafter ward kitchen) were established on the wards, three of them in the new clinic and the fourth on the maternity ward. These ward kitchens are under study here. In each of these kitchens, breakfast and lunch is prepared for four small wards (except for the maternity ward, which is one large ward), and there is a cold buffet open 24 hours. Supper is still prepared in the central kitchen, transported upstairs, heated and served in the ward kitchen.

The large central kitchen in the hospital is located in the basement, and until recently, this kitchen has delivered all the food in the hospital. This central kitchen service was responsible for the preparation of hot and cold food for the wards and for the management of the staff canteen. The staff consists of 12 kitchen aids and their manager and assistant manager. Eight of the kitchen aids have formal training as cooks. During the time of this study, the decision to outsource the central kitchen was made, and this has later been implemented.

[3] Man year / Norwegian: årsverk

5.3 Knowledge management in a bureaucracy – a knowledge intensive wannabe?

The organization under study is in the public sector, which is a categorization simply made. However, in reviewing the literature on learning and knowledge creation, the question of whether it can be characterized as a knowledge intensive organization becomes importunate, since many of both conceptual and empirical contributions in the field concern organizations in this category. Precisely this is discussed in the following chapter.

The concept of knowledge intensive organization is discussed and defined in chapter 2.2, and in chapter 4.2.2 on selection of context for the case study. In this chapter, I discuss whether a hospital can be called a knowledge intensive firm.

The hospital under study, as any hospital, can be described as "thoroughly regulated institution", in that it has codified rules and procedures for every activity. It has a traditional hierarchical structure and bureaucratic features. The management has been conscious about labelling the organization "a learning organization". A hospital is knowledge intensive (ref. chapter 4.2.2) in the sense that there is a lot of knowledge in the organization, within several disciplines and within the fields of administration and organization. The intensity of knowledge may be somewhat unevenly distributed, which means that in some occupations and wards the intensity is very high (for example between the specialist doctors and on the surgical ward); while it is lower in the kitchen staff and in other similar support departments.

A hospital is a hierarchical, skills-intensive and knowledge-focused organization (Moumtzoglou, 2003:231). The degree of knowledge intensity within the organization does, however, vary. From, on one hand, the hospital orderlies, the cleaning staff, the kitchen staff and reception clerks, to, on the other hand, the medical doctors, midwives and trained nurses. The level of knowledge intensity will not, however, be discussed here with a "traditional" focus on formal knowledge and professions (Alvesson, 1993) in hospitals. Knowledge intensity is seen in connection with how learning and knowledge creation is facilitated in the organization. A hospital can be seen as knowledge intensive organization, but does not carry all the typical features of a knowledge intensive organization. The system, or the structure, does not allow for a high degree of autonomy, as the definition of knowledge intensive organization calls for, and rules and procedures are salient.

In view of the characteristics of knowledge intensive organizations (see chapter 4.2.2), the hospital will have some of the features:

►Knowledge development is of great importance to the daily operation of this kind of organization, and this is reinforced by the competitive situation hospitals are in. Their competitive advantage will depend on their ability to use and develop new knowledge in their practice.
►Solutions are tailored to fit the patients and interaction with patients (customers) is high.
►The employees own a vast amount of the means of production (the knowledge), they are organized in teams, and their competence often exceeds that of the management, and because of the complex and competitive environment they must be innovative, both administratively and within medicine and care.

The organization also has features of a hypertext organization (Nonaka 1994), and it also functions as a matrix organization. Given the tension between high and increasing pressure for learning and knowledge creation, and the large amount of routines and procedures in an organization like a hospital, the organization constitutes the oxymoron of a "learning hospital" (Weick and Westley 1996). Rules and procedures are salient, but can, however, also be seen as a processes of learning, in that the employees have to actively engage in procedures with others, and this will call for reflecting on the procedure and perhaps changing it, or suggesting changes to it, if it is found inadequate (Bresnen, Goussevskaia, & Swan, 2005). The degree of autonomy does vary, but not necessarily along professional lines. The element of practical work in hospitals, within all groups of professionals and non-professionals makes the hospital employees deviate from the characteristic of knowledge workers (Newell et al., 2002).

To conclude I assert that the hospital is both a knowledge intensive *and* a skills-intensive organization. The fact that it is also bureaucratic and hierarchical does not necessarily represent a contradiction to the notion of the knowledge intensive organization, as bureaucracies are perhaps less rigid and more fluid and dynamic than they are commonly perceived to be (Styhre & Börjesson, 2006). The discussion of what a bureaucracy is or is not is outside the focus of this study, but the within the bureaucratic frame, the hospital has features of a knowledge intensive company, is skills-intensive and has a diverse workforce. This combination constitutes a challenge to knowledge management.

In the next chapter I start the long journey of analyzing the data collected in this study.

6 Analysis

In this chapter I provide a detailed analysis of the empirical material in this study. Data is analyzed and categorized with regard to at least two considerations: the research questions and emergent issues. The latter will further ensure that the voice of the informants is heard, as well as my interpretation through the way I present the field.

There is no explicit strategy for knowledge management in Bell Hospital and no specific document with that label. Still, through the study of its strategic manifestations and through the development and the implementation of the general strategy, a strategy for KM is visualized. An articulated strategy becomes visible through data collected from the management, while a strategy-in-use becomes visible through analyzing the daily work, through the way the hospital is organized and the way work is divided. Since the focus is on learning and knowledge creation during work in the hospital, I have specifically searched for fields of interaction, learning and knowledge creation might be. Barriers that seem to obstruct the opportunities of learning and knowledge creation emerged during the study, and came to constitute the most apparent findings.

The following subchapters will be organized in an identical manner, except for the first one, 6.1, which outlines the strategy for knowledge management where I describe the measures taken by the management. The subheadings in this chapter will deviate some from the rest since this first chapter has been analysed along a set of dimensions different from the ones used in the analysis pertaining to research questions two and three. In the process of identifying the strategy for knowledge management I have used labels used by the hospital's management, like "learning organization". The content of this concept, what it means to them, has been under study.

Further, I have found it appropriate to present each unit under study individually. The structure of these chapters will be slightly different from each other, since the informants comprehension of the phenomena is under study here, and they sometimes have emphasized different aspects. The dimensions used for analysis in these four chapters where data have been analysed in order to answer research question number two and three, have been *horizontal* and *vertical* interaction, meaning respectively the interaction they have with their peers with more or less the same occupation or tasks, and with colleagues in different occupations or with different tasks.

In the following presentation of the wards and support departments under study, I describe how the employees interact during work and how they perceive the conditions for interaction. I start by supplementing the introduction on each unit already given in chapter 5, and this is followed by a classification of the opportunities for interaction. It has been necessary to do some individual adaptations, since the wards are quite different and they are again quite different from the support departments.

The material is analyzed along the following dimensions: who do the informants interact with and where does this interaction take place? More specifically these dimensions have been 'horizontal interaction' and vertical interaction', with subcategories such as 'interaction during task performance' and interaction separate from tasks. In addition there are the dimensions drawn up in chapter 4.2.1; which are the dimensions along which the study is designed: the two types of units (support units and core units) and where the units are located in the hospital (new or old premises).

The structure of the following chapters is more or less the same. Small deviations appear as a result of different emphasis that the informants have when they narrate from their work day. This contributes to paint a richer picture of the opportunities for learning and knowledge creation in this organization.

The chapter is rounded off with a summary and includes the comparative aspect in that the differences between the units are also under study here.

6.1 Characteristics of the strategy for knowledge management

In this chapter I will present the hospital and its strategy for knowledge management (KM). In order to study and frame the characteristics of this strategy, document studies and intranet studies have been performed, and interviews with managers and staff in the ICT and training department have been accomplished. This chapter serves as a backdrop for and possibly a contrast to the more detailed analysis of the units under study in which I focus on the work-related opportunities for learning and knowledge creation.

Bell Hospital is considered by the health authorities to be a *model hospital*, and in 2006 they used the least money per patient of all the hospitals in Norway. At the same time they have very good feedback from the patients in their annual customer surveys. After the new clinic opened, the hospital became a target of interest from different external groups due mainly to two aspects: (1) the implementation of organizational change project and (2) the physical design of wards and premises in the new clinic.

The hospital is organized as an independent health enterprise and this is a result of the restructuring of the health care sector nationally. It has been threatened with closure on several occasions during national reorganization processes, and the staff works, goal oriented, on moulding its position as an important rural hospital; important for the locals and as an institution in the local community to be counted with. This is visible in the hospital's vision: "Bell Hospital – for you when you need it". The proximity to the local population is seen as important, but at the same time, the staff works to expand their "field of fire". The national financing system for hospitals favours high numbers of patients, including patients from other districts (that actually "belong to" other hospitals). In their "business plan" and their value base there is an emphasis on efficiency, on customer (patient) satisfaction and on "Patient first". At the same time, since there is a shortage of health care workers, the hospital aims at being an attractive workplace for competent employees. Through this value base, the hospital underscores the importance of attracting competent employees and being attractive to those employed there.

The following is an analysis of the characteristics of the strategy for knowledge management in this hospital. Since they have no document that outlines this strategy, this has been a study of statements and actions related to this issue made mainly by managers and members of the ICT and training department, and I move to suggest what seem to be the underlying assumptions on knowledge and learning that underpin the statements and actions in the KM strategy.

6.1.1 'Bell Hospital as a learning hospital' – the slogan

'Bell Hospital as a learning hospital' was an idea born around 2001 at an internal management training conference. Following this conference, the idea was further developed in leaflets by the *Department of ICT and Training*. The vision of a learning hospital, however, was not implemented in the annual reports. Except when they market the organization towards potential employees, there is little mention of learning or knowledge in the written material or on the homepages on the internet. However, the concept of the learning organization is internalized in the vocabulary of parts of the organization, mostly with the management, and leaflets and other material elaborate on the meaning of being a learning organization. The internal consultants in the ICT and Training Department are "travelling speakers" on the topic "Bell Hospital – a learning organization", and attractive for and hired by other hospitals, academic institutions and consultancy services.

In the leaflet that portrays Bell Hospital as a learning organization, there is a list that defines the road to becoming a Learning organization. It mentions

exploiting existing arenas for learning, that key employees should be urged to build external networks, time for reflection, knowledge sharing and competence development (Bell hospital (pseudonym) brochure 2003). Several of the informants had heard about this slogan, and some had a firm understanding of what it was and could easily identify arenas for learning in during work.

Quote no. 6.1-1

> As far as learning organizations, one has to take care of each day and each moment in order to learn. One can get more out of our lectures through a combination of learning and teaching, but then - during our morning meetings we also have - when the midwives arrive, discussed every patient with those who are regularly in Gynaecology and the maternity ward. Because I believe this makes them learn a lot. (department manager A, department T)[4]

Other informants had only a vague or no idea. In general, the informants tend to connect the learning organization to external courses with subsequent internal communication of what has been addressed in the external course.

Quote no. 6.1-2

> Q: No. What do you think it means? How do they interpret it do you think? A: I really do not know. Something about them being good at giving, lecturing, giving advice and such, or? (nurse's aid V, cardiac ward)

The strategy for knowledge management drawn up by the top management appears to emphasize upgrading the general competence level *and* the specialist formal competence. This is mainly done through courses and internally organized classes. Consequently, if the range of courses is reduced, they perceive that they do not learn anything.

Quote no. 6.1-3

> But, traditionally we think course. When courses are taken off the list, for example, they have not learned anything that year. That is how it is, in a way. (Internal consultant S)

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[4] The quotations are made anonymous. Within the quotation a question from the researcher is labeled Q:, while an answer or comment from the informant is labeled A:

They do however have work based learning as part of their vocabulary, both in the administration and on the wards. Little, however, has been consciously and practically done to facilitate learning during work and the thought of regulating this activity is foreign to them. The instrument they turn to is project work with a combination of problem solving and learning as objectives. In meagre economic times and during very large and demanding projects, like building the new clinic and introducing Patient focused redesign, however, they experience that they revert to perceiving learning as something that happens in formalized, classroom-like arenas.

Quote no. 6.1-4

> And the other thing is that we have now tightened the organization as far as resources are concerned, such that the slack we had earlier is now gone. And that we notice, we really do. And then we regress to where learning equals course. One course at a time. (Internal consultant R)

The two groups of units under study here, the medical and the non medical, can be seen as respectively "upstairs" and "downstairs". When asked whether the strategy for knowledge management or the concept of being a learning organization cover the support departments, the manager of the new clinic says that the support departments have no role to play in the learning organization, nor are they present in the arenas where knowledge is shared and created.

Quote no. 6.1-5

> A: To be a little unkind, there is very little room for them. They have never been prioritized or shared an arena with anyone. As mentioned, we eat lunch together and discuss work and patients and … I do not think they have participated in that part. As far as the secretaries are concerned, I think there has been a steep learning curve. A real lesson to us. To see what happens when they do not participate to start with. When others make plans. Q: Is this how you have considered it? A: Yes, I think so. I think we actually "stepped in it". Because there was a group that worked on "interaction on the ward (yard), and most of them participated there, but for some reason or other the secretaries were not included. That became a problem, practically speaking - and we knew – we could have said: That is the way it is going to be. At the same time, we did not reach agreement on the model as it turned out and it was just formally discussed and informed about – they were not involved in this. (manager P)

In the following I will describe in more detail some of the elements of the strategy for knowledge management in this organization, and through this description indicate characteristics of this strategy. These elements are the use of projects, with project examples, and the use of training and technology.

6.1.2 Learning as a side effect of project work

The management uses projects for several purposes, and with varying results. One such purpose is to increase the participation and involvement across all occupational and hierarchical levels in the organization. A representative example is the work on the requirement specifications during the planning of the new clinic. A high number of project groups were established and there was participation from high and low. This planning process and the project work were deliberately used as a way of building a positive organizational culture. The process was organized and implemented by the *ICT and Training* staff and culture-building was their "hidden agenda" (the reference to 'she' in the quote below is to the project manager of the building process).

Quote no. 6.1-6

> And when she was going to find out how they wanted the new building she made some rounds and checked each health care assistant. And I have to say that it has helped build up our environmental philosophy here, that they have been able to take part in the process. (Internal consultant R)

Furthermore, most of the employees have participated in workgroups, which have focused on different micro level procedures for the new clinic. This project work is seen as one of the roads to becoming a learning organization.

Quote no. 6.1-7

> Q: Was Bell Hospital a learning organization in 2005? A: No, I did not talk very much about that in 2005. No, it is actually difficult to say. In a way, I think we could say that because through all the work with the groups that have been here, this has clearly been a new learning arena for us. Because people have communicated across professional groups. (internal consultant S)

The ICT and Training Department is responsible for organizing most of the large projects, and they see projects as part of their knowledge management strategy. As mentioned, these projects are not usually specifically aimed at building competence or as an opportunity for learning and knowledge creation, but are for example aimed at changing the work method towards a process-based model based in the main treatment chains. The project work, which led to the new model, made employees work in interdepartmental and interdisciplinary groups that turned into opportunities for learning. One of the tasks of the groups was to map the core treatment processes. This is described in more detail later in this chapter.

One example of the use of projects for learning purposes, is from the kitchen where a comprehensive longitudinal project to raise the general level of education and competence was implemented. Today, however, the kitchen is

outsourced for economic and working environmental reasons. What remain are the ward kitchens. Another example was a project or programme on peer supervision which was implemented for managers and for one ward. However, the ICT and Training Department did not consider the latter a success, due to lack of time and internal conflicts.

Quote no. 6.1-8

> A: I feel I managed it well when I was running it, but it slipped fast once they were back to normal activities. Q: In other words, there is a lack of time. A: Yes. And some conflicts arose there – with working hours and the like. Although not for managers. Q: But there we touch upon something very interesting and extremely difficult, of course. It is how – how do you accommodate for the learning. For you have not broken that code, right? A: No. (internal consultant R)

Below I give an account of a comprehensive project that coincided in time with this study. It is a reengineering project aimed at defining the work process in the organization, and to organize the work in line with these identified core processes. The purpose of presenting this project is to show an example of how a project is part of the strategy for knowledge management.

Project example: Patient Focused Redesign (PFR)

An example of how projects are seen as facilitating learning and knowledge creation by the management is the Patient Focused Redesign (PFR). PFR is inspired by Business Process Reengineering (BPR). The idea of this work method is to organize tasks around processes, rather than functions. These processes are the main treatment (of illnesses) processes.

The assumption is that 80 % of the patients are within these main treatment processes, and there is a large efficiency improvement potential by streamlining these processes. The mapping of the processes had been implemented in most parts of the hospital at the time this study was performed, and the mapping itself is seen by the facilitators to have created fields for learning and interaction. Further implementation, however, has been difficult. The redesign requires the formation of many different new teams, like the process teams, the treatment teams etc., which are vertically compounded. The success of the implementation seems to depend on individuals who can be locomotives and pull the processes forward. As the internal consultant states in the quote below, they have had initial problems, especially when it comes to establish the cross professional teams.

Quote no. 6.1-9

> A: Because through all the work with the groups that have been here, it has clearly been a new learning arena for us. Because people have communicated across professional groups. Even though we started with this earlier, we worked a lot with it in 2005 and went through it again now in a way. Q: The mapping, you mean? A: Yes. Because not everything has worked the way we thought it would. Not everything got started; there have been replacements of doctors, and there have been many such events that caused things not to get started. Q: But tell me again, what you mean is that before you moved in you had some project assignments that were about mapping the procedures, correct? A: Yes. Because then we went through all the so-called main processes. Q: And then a team was supposed to come in to maintain it, and they did not get started? A: Not everyone. Q: Did anyone get started? A: Yes. Q: How many? A: Two or three, probably. Q: What are they called, a process team? A: Yes, a process team. (internal consultant S)

The process teams are crucial for the work method to function according to its intentions, and the management has high expectations of these teams particularly when it comes to learning and knowledge creation during work. This is more due to the cooperation in the teams than the actual tasks and responsibilities[5] which are mainly on defining and monitoring quality measures, treatment plans and target figures.

The teams created for the purpose of fulfilling the PFR project, like the process team and the treatment team, are seen as part of the knowledge management strategy. A balanced score card system has been introduced on one of the wards and is considered to be a prolongation of the patient focused redesign. The balanced score card is to be maintained by the process teams, which is part of the patient focused redesign. There are, however, major difficulties in establishing these vertical teams.

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[5] "Define quality measures and critical success factors according to laws and directions, and according to the objectives and plans of the region, the health enterprise, and the ward.
Define indicators according to the objectives and to CSF.
Monitor the main processes and define target figures.
Update treatment plans and procedures
Handle reports on unwanted incidents
Initiate improvement-projects for the purpose of stabilizing processes and improving the level of quality
Manage the main care processes according to the objectives."
(*Presentation by the internal consultant A. in the pilot project meeting*)

This reengineering project is an example of staged vertical interaction integrated in the work process, and an example of how projects are used as learning mechanisms in this organization. Projects appear to be one of the most important measures taken by the management to enhance learning, along with formalized training, which is commented in the following.

6.1.3 Formal training as part of the KM strategy

There is an emphasis on external and internal courses as means of learning and knowledge creation in the hospital. The formalized training comes in four different shapes:

►Large training programs for whole groups of employees with the goal of increasing the formal competence. For example the training of the kitchen aids gives them formal qualifications as cooks.
►Management training
►Institutionalized individual competence plans
►External discipline specific courses that can later be turned into internal courses for colleagues. These courses are included in the individual competence plans.

The Department for *ICT and Training* has the paramount responsibility for the individual competence plans, but the middle managers have the practical responsibility for drawing them up in collaboration with each subordinate. These individual competence plans mainly contain plans for courses and formal training (for example nurses specializing in a certain field). Behind all these measures taken there are at least two underlying assumptions: one is that through management training, knowledge will seep down in the organization "naturally". The other is that formalizing competence will make the employees competent in other matters too, for instance in handling interaction and maintaining a good working environment. The management realizes that this does not always work, but they have a hard time thinking of other ways to work on these issues.

Quote no. 6.1-10

> But what I hoped would happen then was that when they were educated and we emphasized the work environment and became aware of how they could work together, things would improve. However, I do not think it has been… But what would the alternative have been if those two dimensions had not played a part. (internal consultant R)

Middle management, in this case the ward managers, relates *the learning organization* to individual competence plans. Drawing up individual competence plans is a middle management task and these plans represent part of the visualization of *learning* in the organization. The content of the

competence plan for each employee mainly contains a list of formal training, either shorter courses or long term formalized professional training (for instance qualifying as a specialist nurse), that they aim to complete in the following year. Courses and formal training are, however, also a matter of the budget, and there can be incongruity between the plan and its implementation. One middle manager points to such incongruity, and says that there is no point in working out these plans when "I have to be realistic enough that I should not work out the plan for each one" (Department manager F, department U).

The leadership training is regarded as particularly important since they found that through this training program they had also created a space for interaction for the managers.

Quote no. 6.1-11

> Oh well. But we got it started and suddenly we even had a new arena; a meeting arena for managers and directors and their staff. And this has definitely helped build our culture. (internal consultant R)

Training is also seen in connection with the introduction of new technology and in addition technology is seen as a knowledge management tool in itself, and this creates an opportunity for learning and knowledge creation; as we shall see in the next chapter.

6.1.4 The role of technology in the KM strategy

Quite often, internally organized learning activities are initiated as a result of the introduction of new technology. These can be machines for support in the nursing and treatment activity, or for administrative purposes. Training programmes are developed, and formal certifications are often involved.

As in the field of knowledge management in other industries, Bell Hospital has developed and emphasized technological tools for knowledge and information diffusion. All employees have their own e-mail account and the hospital has an extensive intranet. Several of the manuals and procedures are to be found on the intranet and are updated there. There is however, still a problem that not all the employees feel comfortable using the e-mail system or the intranet. Sometimes they experience that updating the system moves too slowly to be of any help for performing the tasks, and the staff sometimes has to find other ways of updating their information, usually in face-to-face interactions. An example of this is when the kitchen aid on the maternity ward needs to find out how many patients will be in for dinner, and the midwives have not had time to update the list on the computer. She then turns to the cleaner, because the cleaner gets the message verbally from

the midwife – since she has to clean the rooms and make them ready for new patients.

As we see below there is scepticism towards the idea that ICT "reaches everyone", because many employees resist or perceive that they lack time for using ICT:

Quote no. 6.1-12

> A: It does not help that they send an e-mail to everybody, because not everybody is necessarily reading their e-mails even. Q: You do not think those e-mail things work? A: No, I actually think some people dislike working with computers and feel that they do not have time for things like that. E-mail now requires that all work groups are on line – they probably feel that there is enough work to do with the existing data. (kitchen staff N)

The view on technology as a knowledge management tool and on introduction of new technology as a field for learning varies among the informants. Nevertheless, it helps fill out the picture of the strategy for knowledge management in the organization, which I know turn to give a summary of.

6.1.5 Summary

Summarized, the strategy for knowledge management seems to include the following elements:

►Social events, like Christmas and summer parties
►Management training and -meetings
►Participation in projects, like the planning of the new clinic and introduction of the Patient Focused Redesign work method
►Formalized training settled in individual competence plan (sometimes including a certificate of apprenticeship)

The central features of the strategy for knowledge management in the hospital as a whole seem to be:

1. learning where there is also teaching through formalized training
2. learning through working in defined and formalized projects, where the learning objective is only partly conscious

6.2 The maternity and gynaecology ward

The maternity/gynaecology ward is one of four units under study and one of two clinical units. This chapter will present data analyzed from this ward in accordance with my research questions. The interpretations will be accompanied by quotes from informants to illustrate the points made.

The maternity ward is well reputed, popular in the region, has a high number of patient beds filled, and an increasing number of women give birth in the hospital. The gynaecological part of the ward, on the other hand, has seen a decline in the number of patients. This part of the ward has six beds. The ward has about 42 employees. Nine of these are physicians, 26 are midwives (11 work full time) and 17 are maternity care assistants (11 work between 75% and full time). Annually 800 women give birth on this ward and they treat gynaecological patients.

The maternity/gynaecology ward has a traditional hospital layout, with long hallways, one small staff office where the receptionist is situated and a staff room where the employees can take their breaks, have coffee and retreat when business is slow. Only the employees have access to these areas. Below is a sketch of the ward:

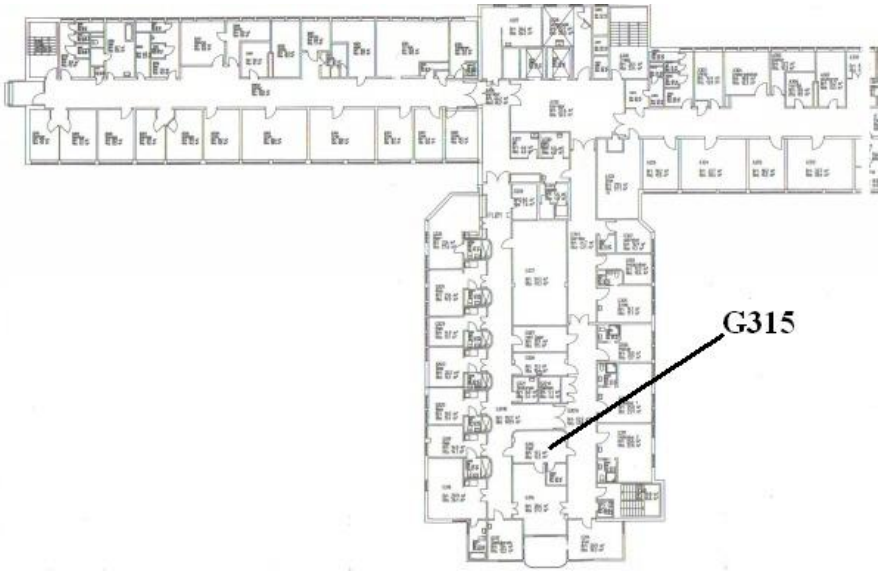

Figure 6-1: The maternity/gynaecology ward in the old building

The staff office is room no. G315 in figure 6-1. It has a curved wall made of glass. On the left, there are mainly patient's rooms. On the right, there are miscellaneous rooms and delivery rooms. The staff office is located close to the delivery room, where all the action is, and to the patients' rooms. The horizontal line in the 'T' that forms the ward mainly consists of the gynaecology ward, meeting rooms, and offices.

The ward has three hierarchical levels. The department manager is a doctor, and the assistant department manager is a midwife. As a small hospital and a small ward, there is a short power distance between staff and management, especially middle management (management on the ward). "We talk to our leaders every day" (midwife B).

The midwives and the medical doctors work with deliveries and delivery-related activities, as well as with the gynaecological patients, while the maternity care assistants work mainly with the newborn babies and the mothers, in addition to assisting the midwives during deliveries. The midwives alternate between the two parts of the ward (delivery and gynaecology). The majority of the patients in the maternity ward are not considered to be ill in a ordinary sense. There is a lot of joy on the ward when babies are born, although there can also be great sorrow. The patients only rarely need special treatment, and they are self-reliant to a high degree. There are also a large number of visitors at most times of the day – and night.

The gynaecological patients form a contrast in that they are ill, often admitted for operations, and, as this group of patients include cancer patients, sometimes with serious diagnoses. The maternity and gynaecology ward is jointly organized in one ward, although somewhat divided physically within the ward. It is quite unusual in Norway to have maternity and gynaecology patients and treatments on the same ward. On the internet pages, the hospital "warns" against this, saying that the gynaecology patients might bump into pregnant women and babies:

Quote no. 6.2-1

> The Gynaecology Ward is in the "old building" and for the time being has no private rooms with shower and toilet. There is a common dining room and lounge in the delivery and maternity ward, so that you will see both pregnant women and newborns. (*Bell Hospital internet pages*)

On the maternity ward, the patients are not attended to that much in their rooms after they have given birth. The staff, doctors and midwives, does for instance not make regular rounds unless there are complications of some kind. This ward is located in the old hospital building, not in the new clinic, and the physical layout of this ward is old-fashioned compared to the other ward and the two support units in this study. The organization structure however, does not deviate from the other ward under study (cardiac ward).

Shortly before conducting this study, the maternity ward had been working towards being re-certified as a *baby-friendly ward*. This is an international certification. In addition, this study also coincided with a pilot project on the ward called "Balanced management by objectives", which was an

introduction of a Balanced Score Card system. This was seen as a part of, or as a prolongation of, the *Patient Focused Redesign* project (details in the previous chapter). I will return to this in the analysis of projects as opportunities for learning and knowledge creation at the end of this chapter. First, I will attempt to draw a picture of the work based interaction on the ward. I have looked at it *horizontally*, among peers, and *vertically* up and down the hierarchy and across professions, occupations and tasks.

6.2.1 Opportunities for learning and knowledge creation

In this chapter I will describe the opportunities for learning and knowledge creation in the maternity/gynaecology ward. There is a clear division of tasks on the ward basically with clear borders between the different professions/occupational groups. The assumption is that the way the tasks are laid out and organized has implications for what opportunities that emerge for the staff to meet and interact, hence for learning and knowledge creation. This applies both horizontally, between peers, and vertically, between staff in different professions, occupations, and hierarchical levels.

There are largely three groups of employees in the maternity ward, the gynaecologists, the midwives and the maternity care assistants. The midwives alternately work in the gynaecology ward and the maternity ward, where they are responsible for the deliveries. In the delivery rooms, the midwives are the indisputable bosses – that is until the medical doctor walks in. This does not happen frequently during normal births since the doctor is summoned only if there is a problem. The maternity care assistants will assist the midwife during the delivery, especially in the last phases and after the baby is born. The assistant will tend to the mother and the baby during confinement, and she is the expert on breast-feeding. In this study, I have mainly interviewed midwives and maternity care assistants, and this presentation will therefore have its focus on the delivery/maternity part of the ward, since that is where they have their focus.

There are alternately very busy times and quiet periods on the ward. This is due to the character of the main activity which is childbirths; most births are not possible to plan. During the quiet periods, there is time to talk and sit around in the employee lounge. On the maternity ward, they perceive that they are conscious about learning, adopting new work methods, and creating knowledge. Reflection *on* practice as part of the interaction takes place during breaks and as the employees pass or "bump into" each other in the hallway. In the following I will attempt to classify the opportunities they have for learning and knowledge creation.

Horizontal interaction

Horizontal interaction refers to interaction between peers; employees who have the same profession or, if it cannot be characterized as a profession, the same training or the same kind of job. In this ward two occupational groups have been under study: the midwives and the maternity care assistants.

Most of the informants mention that learning through reflection on practice takes place in the lounge. One of the midwives says (quote below) that she has favourite peers that she talks to and that they share stories informally. She prefers these peers because they are especially experienced and reflective, and they often have additional training in adjacent fields, for example psychology. The interchange comes about quite informally, but perhaps not totally by chance since she is aware of her colleagues' competence and training; and she feels that she learns in these situations.

Quote no. 6.2-2

> A: Yes, we talk informally when we sit in the lounge for example, perhaps we discuss a delivery and then we sit there and chat a little about, for example, what happened yesterday and – what was said, and then you sit there and have a dialogue. Q: Then learning happens? A: Yes! It can also be a chat on daily matters, but sometimes it is learning (midwife B)

Though the informants perceive that they have constant and ongoing interaction during work on the ward, there is however little interaction and reflection in the actual hands-on situations, such as during a delivery. The midwives are repeatedly urged by the management to go into "each other's" deliveries, in order to learn from each other, but they rarely do. This means that they rarely see each other in action. The assistant manager, who is a midwife herself, says that participation in each other's practices is important for learning purposes and not just in order to help each other out, like she explains below.

Quote no. 6.2-3

> Not just because they are going in to help each other, but… actually I think it is important that when one does not have much to do on a shift, one may as well be in the delivery room, and as long as the woman agrees, to have two midwives there. Because then they learn a lot from each other. (assistant manager/midwife C)

They do however consult each other during delivery, but not *in* the delivery room. The midwives do consult each other in discussions over results (i.e. heart rhythms), on printouts, out of earshot of the patient.

The other group under study here is the maternity care assistants. They seem to interact largely with each other, also in the presence of the patient and

while taking turns trying out methods of assisting with breast-feeding. Supervision of breast-feeding is their main responsibility in addition to assisting the midwife during deliveries. The maternity care assistants are on the lowest level in the ward hierarchy, and their education is much shorter than the doctors' and the midwives'. Their main and most autonomous task is to help the mothers get the breast-feeding started and interaction between these assistants is high in this task. Norway has, in many ways been a vanguard nation when it comes to breastfeeding[6]. The maternity care assistants say that when they work with the mothers, they always talk to each other (as well as the mother) and tell each other what they have done and how they reason. This communication seems to flow, in and out of the presence of the mother and presence of other staff and patients. The maternity ward has mostly rooms with multiple beds, so the patients spend a lot of time in the presence of other patients. If a mother has difficulties, the assistants will turn to each other and urge each other to make new suggestions, bring out their own ideas and solutions. As the following quote demonstrates; they seem to reflect collectively on the task while performing it.

Quote no. 6.2-3

> And sometimes we have difficult cases – many things go by themselves – but when we are working, we talk to each other and say: Now I have done this, I have tried that – do you think it is a good idea that I have done it this way; is there something you would suggest or have I overlooked something? We use each other a lot. That goes for maternity care assistants mostly. We use each other to help out – and some are unable to do it and they have tried: You try it – go on in now! Q: And that is OK? There is no defeat in that? A: Not at all! Because our goal is to make the patient manage and that the mother is satisfied. And whoever can make that happen is irrelevant. (maternity care assistant E)

The management seems to have a clear understanding of how these maternity care assistants cooperate and how they constantly tell each other stories and reflect on practice. The manager tells us about how they work in the following way:

[6] Of all babies in Norway, 99% are breastfed right after they are born, and 80% are still breastfed after six months. There is prestige connected to succeeding in this task, not only for each employee and the mother, but also for the hospital and as national policy.

Quote no. 6.2-4

> They make a plan for this woman, for instance if there are nursing problems: What should we do. And then they discuss it thoroughly, during the day, during the shift, during the night. Discuss it. Bring things out during lunch if there is anything in particular. They can discuss it during lunch, because they eat on the ward since they have to – since they have their break included in their work hours. (assistant manager/midwife C)

Summarized from the above we see that the two occupational groups in the maternity/gynaecology ward under study perceive that they have opportunities for learning and knowledge creation, but in slightly different ways. The midwives will reflect on practice during breaks and with peers in the lounge, while the maternity care assistants will additionally reflect on practice while in the midst of it.

The midwives and the maternity care assistant also interact with each other and with other occupational groups vertically, which creates opportunities for learning and knowledge creation. This is focused on in the following.

Vertical interaction

Vertical interaction emerges when employees in different occupational groups or employees on different levels in the hierarchy interact. The vertical interaction on the ward can be divided in two: (1) the interaction that emerge during execution of tasks and (2) other work related interactions, formal and informal.

The deliveries, the gynaecological consultations and the operations stand out as vertical opportunities for learning and knowledge creation during task performance. Even though the midwives are rarely present in each other's delivery rooms, the maternity care assistants are present there with them. They work with the midwife during the delivery, and since they work shift and a lot of them work part time, they seldom work with the same midwife. The assistant is present and sees how the midwife works on a delivery and will therefore build experience from working with several midwives. The midwives will sometimes ask the maternity care assistant how the other midwives do this and that, and this may in turn result in changed practice. As the midwife says in the quote below, she will then be curious and perhaps contact the other midwife in order to learn more.

Quote no. 6.2-5

> A: And that we – like the maternity assistants, for example, they are with the midwives – and they are the ones I have to ask: How does that midwife do it? - about how to do sutures. Q: Yes. A: This person sews this way and

> that person that way. I do not sew that way. But maybe I ought to start doing that. Then I have go with that midwife and…..(midwife D)

This communication and exchange between the midwives and the maternity care assistants seem to happen mostly on the midwife's terms. An assistant does not make suggestions without being asked. Some of the assistants have expressed that they do not have the courage to make suggestions to the midwife, even though the management urges them to do so. The manager urges them, as quoted below, to contribute during practice with the knowledge they have acquired when they have teamed up with different midwives.

Quote no. 6.2-6

> Of course our maternity care assistants are skilled here and they are – they have experienced many different ways to deliver. Because they get together with all the midwives. They have learned a lot from the various midwives, so when they come to me and are in despair: "I dare not tell her it can be done this way!" Then I say: You should because you have seen between twenty and twenty-five different ways of delivering a baby – and you should use that when they get in a jam in the delivery room with a midwife there. Then you should say: Maybe it is a good idea to do this. And you should do that – that is allowed. I have given you the permission to use it. And then there are some who say they are afraid. (assistant manager/midwife C)

The way the management describes the role of the maternity care assistants in the above quote is not necessarily how the midwives perceive them and their role, which additionally complicates the situation. They acknowledge the presence of the maternity care assistant, and they also appreciate her suggestions and opinion; when they ask for it. To have the assistants suggest measures on their own initiative is considered by one of the midwives to be too much of a good thing. The midwife is very conscious about her being responsible for the delivery. As the quote below shows, the midwife is afraid that a disagreement between the midwife and the maternity care assistant can damage the respect that the patient must have for the midwife.

Quote no. 6.2 -7

> A: Well, I do not want too much of that. Because it is, after all, our responsibility. And there may be many ideas turning up that may be – sound tempting to the one giving birth too – but one has to consider that . Q: Yes, so now that has been said. A: And one has to stand up to what one says and cannot lose respect. I am right. So, there is some balance between being a good support to me and to the woman, but at the same time, not being too interfering. (midwife B)

One of the other main vertical interactions consists of the midwives and the medical doctors. These communities or interactions take place both on the

maternity part of the ward and on the gynaecological part. The openness to participate in each other's practices seems to be perceived differently by the medical doctor versus the midwives in this instance. The midwives perceive that there is a lack of initiative on the doctors' part to invite them in, and the doctor, on the other hand, perceives that the midwives should show more interest in participating in these practices, specifically the gynaecological consultations and operations. The middle manager (midwife) on the maternity ward says in the quote below that invitations and initiatives lack on the doctors' part.

Quote no. 6.2 -8

> We miss the fact that it takes more initiative to want to teach us something. Well, they have a lot of knowledge but do not take the initiative to update us, or ask us: Do you know this? Now I am going to do this and that, do you want to come along? They do not do that. In a way, we may be able to learn something – of course we can – but we have to ask for it ourselves – that is totally tangible. I know that some people in Gynaecology have taken part in surgeries. Then the midwife asks: May I take part in that surgery today? Especially when we started here – we were not used to having Gynaecology – in order to get updated and know how to do it, a few midwives took part in surgeries. Then we may go in. In other words, there is no unwillingness – when you ask you may participate. Q: They do not think about it? A: They do not say: I am going to do something very interesting, do you want to participate? They do not do that. And they teach us, at least during these internal lectures. But they do not – a teaching group organizes that – they are not the ones who say that now – now we have something interesting we want to convey. And we miss something here – being a little more active and wanting to learn something. (assistant manager/midwife C)

The doctor on the other hand, as quoted below, perceives that the midwife does not remain during a consultation if not specifically asked to by the doctor, and thereby does not allow for the creation of a learning space.

Quote no. 6.2 -9

> No, when one works as a doctor and, for instance has patients here, make evaluations and such, then the midwives never participate and – they let the patients in, and then they leave. Never help out…. (department manager A/ department T)

The gynaecological practice, which is a part of the ward, is rarely mentioned by the midwife informants during the interviews. This may be due to the fact that in this part of the ward, midwives have a different role than they have in the delivery part. They are less autonomous and function more as assistants to or in cooperation and interaction *with* the doctor. The doctor has learning

as an objective in her intention of letting the midwives observe during operations and consultations, and she sees the immediate advantage of increasing the midwife's competence on the operation since she will be more competent in dealing with and informing the post-operative patient.

Quote no. 6.2 -10

> Yes, I have partly brought them in to make it more exciting. I bring them along to surgeries – they get to participate when I perform incontinence surgery, for example. When the patient wakes up they can give correct information and…(department manager A/department T)

In the following, I give an account of the places for interaction on this ward which offers opportunities for learning and knowledge creation. This part focuses on the actual place rather than on which individuals or groups actually meet there. Such meeting places are often classified as formal and informal. I do however not find this classification adequate for this empirical setting. As the following description demonstrates, several of these meetings and other types of interaction, can be highly informal in structure and at the same time formal in content, and vice versa.

Meetings

The mornings are busy times for meetings. The doctors have meetings first and they discuss the patients before they have meetings with the midwives. These two meetings have more or less the same agenda and issues. According to the midwives, this repetition of issues forms a barrier for collective reflection, in that the doctors have been through it all before. The meetings and the informal talk between and after meetings takes almost two hours all together. This is characterized as inefficient, but also as an opportunity to bring up incidents and questions, and a time when 'everybody sees each other' as quoted below.

Quote no. 6.2 -11

> But as I said before, this is the time in the morning when everybody sees each other and one might say that: I heard you worked yesterday, and – why did you do this, or ….One has that opportunity – that is also a positive thing – it is not all negative. (midwife B)

However, this is not a totally agenda-free zone, but apart from information given about the patients, it is fairly open. Previous practice included a formalized agenda for the different meetings, which involved reviewing actual cases. Although these meetings represent a vertical interaction where collective reflection takes place, the maternity care assistants are not present. It is a formally called meeting, but it does not have a very strict agenda, nor is it under time pressure. The meeting structure is partly informal, and it

"slides into" a coffee break. This coffee break takes place in the break area, where the assistants are also present.

There has been a discussion on whether the agenda should be 1) more formalized and 2) concern more generic cases; cases not necessarily tied to the present patients. As one midwife states below, they used to have case presentation through storytelling, but they do not have that any more.

Quote no. 6.2 -12

> You see, we have a morning meeting, which you have been to. And there is a lot of discussion about whether we should have this morning meeting, as many people feel that is not important. There was a period of time when – well, it is probably a year ago now, we went through cases during the morning meeting. And that is actually a good idea. It has been toned down a little now. (midwife B)

The management meetings are not perceived as space for learning and knowledge creation but more as a field for one-way information. There are at least two possible explanations: the first is that learning and knowledge creation is perceived as something different than what goes on in a management meeting, where the topics are not necessarily related to actual nursing practice, but to administrative routines and sometimes even to issues on limiting practice in order to save money. This means that when asked about knowledge sharing, the informants tend to relate knowledge to medical knowledge, which makes it a question of the status of different types of knowledge. The informants tend to have positive or negative connotations towards different issues, and the negative matters, like saving money and efficiency demands, are not seen as learning. The other explanation is one of power relations in the group (meeting). When the midwife explains what they talk about in the meeting, she alternates between saying that she participates and saying that "one is informed about what one should do".

Another opportunity for learning is de-briefing. The ward management urges the staff to have a de-briefing after a delivery, especially if it has been difficult or traumatic. However, this is rare, except after grave incidents. In such instances the management actually interferes, establishes the group and implements the de-briefing. The manager is aware of the fact that de-briefings rarely take place, and that instead things like efficient cleaning, tidying and finishing of paperwork is prioritized. Once or twice a year they have institutionalized *general* de-briefings, more like reflection on practice with emphasis on specific incidents. There has however been a problem that the midwives feel uncomfortable when the maternity care assistants are present in the more general de-briefings. They have therefore instituted a

semi-annual meeting for the midwives *only*, where serious incidents and mistakes are discussed:

Quote no. 6.2 -13

> A: No, but it is customary to ask for help. I do not feel I get a lot out of it – not much learning. But then we have something we call midwives' meetings. And that is every half year and things like that might come up there. Because the midwives did not like that they were present all the time! They did not like having the assistants present, but I do not understand that – it is difficult to explain. (…) But I think we should be able to have some learning; I do not feel that has been pushed very much. (midwife B)

Another example of a meeting where vertical interaction takes place is the meeting they arrange when procedures need to be changed formally. Despite the fact that the informants perceive that their superiors are present a lot and easy to keep in close touch with, when it comes to this particular task there is a problem in connecting with the managers for example, in order to have procedures changed. A number of things can cause a change of procedures, from change of medication and new medical research to alignment with a practical experience that has indicated that a new procedure would be better or more efficient. This latter, especially, will require a reflection on practice in a vertical interaction. In the first instance, the doctor in the group will require evidence from research in order to change procedures. A couple of the midwives are responsible for keeping procedures up to date and for changing procedures formally. For this they need acceptance from the manager (usually a doctor) or another doctor that the manager delegates this to. This process of changing a procedure is a very lengthy and elaborate process and involves writing, reading, discussing and re-writing, and re-reading. The midwives collect all the material (evidence) and then they attempt to arrange a meeting with the doctor. In the following quote, one of the midwives says that she would very much like to have this process formalized.

Quote no. 6.2-14

> A: My colleague and I do all this. Yes. And then collect materials and then one has to sit down and think: should we change? On that basis? Should we change anything? And that is when one has to sit down with that manager, or with the doctor she gives responsibility to – sometimes she does. But they are so busy – you know, months and years will pass before they get it done. And then we discuss it and write it down and they have to approve – and then they have to read it through and approve it. It is a very thorough process, because they do not see each other all the time, and because they have no meetings about procedures. I wish you had that, a few hours every month to go through the procedures they were no totally happy with. (midwife B)

The question of whether to always follow procedure or to deviate if the context and experience call for a different solution is a relevant question that several informants bring up. This is also connected to what causes a procedure to be changed and the learning and knowledge creation processes that lies ahead of such a change.

The 'procedure for changing the procedures' is a lengthy and complicated affair. The suggestion for change may come from anyone involved, but the suggestion will have to be discussed with the doctors and external sources of evidence and anecdotal evidence are usually consulted. However, in the example below, the 'change agent' is a substitute doctor, who is used to a different way of doing things and is possibly unfamiliar with the procedure in question. Although it was considered a *serious incident* that the hospital's own procedure was not followed ("there was no time to argue"), the procedure was looked into and actually changed towards the substitute's practice.

Quote no. 6.2-15

> A: No, my impression was that this it was a one time thing, because the doctor on duty at the time was a substitute. And they had listened more to the substitute than to the procedures on the ward. So, sometimes it is a little difficult …..one does not have time to argue, just act. That is why it is so important that the procedures we have are functioning. Q: So, there was no basis for changing that procedure then? A: No, even though we have gone through it and actually made some changes based on that; maybe that was a good idea. So we have changed some things after all. Q: It was a better – he had some ideas…. A: Yes, sometimes that happens too; that you get some good suggestions. It is not that one has to be so rigid as not to use ones head. One has to consider that all the time. (midwife B)

Lunch and breaks

The nursing-staff on duty are not entitled to breaks off the ward's premises. Their lunch break is paid work time, which means that they have their meals whenever they have time in the lounge on the ward. This represents a space for informal interaction, although not at a specific time, and they are often interrupted. The interaction during lunch is largely on work issues, and discussions with work content are "legal" and welcome. This is a space for vertical interaction between the midwives and the maternity care assistants. And it is an opportunity for the assistants to offer their opinions on cases discussed. The assistant manager is aware of this informal place as valuable for practice.

Internal and external courses

There are several arenas for learning where there is teaching. Every third Tuesday in the month they have internal lessons, taught by colleagues and sometimes, external contributors and twice a year they have evening lessons that focus on relevant themes. In addition, they have personnel meetings with discussions of practice. One of the midwives speculated whether this is why the daily meetings are not used for learning and knowledge creation. The shift work constitutes a difficulty for organizing lessons internally, because at no time are *all* the employees present. They consider it to be a problem that a large part of the staff are absent, and try to mend that through sending out résumés by e-mail. This is however seen as problematic since the verbal teaching is perceived as richer than the written material, as one of the midwives asserts in the quote below

Quote no. 6.2 -16

> But now everybody uses e-mail so now we can e-mail the lecture to everyone such that everybody can take part in what we have learned. Q: What do you think about that? A: Well, I think it is very useful, but I feel you cannot convey everything in writing. If I had to write down what I had participated in, I would not be able to say as much as if I were giving a lecture on it. (midwife D)

The employees themselves take the role as teachers, and they are more or less, expected to deliver a lecture if they have been to an external event – like a course or a seminar. This is part of the knowledge management strategy, but it is also driven by the midwives interest in what they have learned and the urge to implement changes according to newly acquired knowledge. In the case below, several midwives attended a course together, and were excited about what they had learned.

Quote no. 6.2 -17

> A: Let's see; now I have to think. What is freshest in my mind is that we were four midwives who travelled to a course on rupture technique in D-town. That was in the beginning of February. There were two midwives there from D-town who went to Denmark and learned a new way of suturing using a special thread. Not so special but maybe different from what we have here. And (that) they have done a lot of research on it, the midwives in Aarhus. So, the four of us kind of got excited about this and were told by A, who is a special development midwife: you can do that during the internal classes in April, and say something about what you have learned, because this you have to put into practice. Q: This coming April, you mean? A: Yes. Then it was about: what do we do with those who have tears? In practice, they should not sit for two days, and we had different kinds of routines. We had one who attended the course at the same time.

> We had no new procedures and I referred to the internal classes. And those are the kinds of things that may come out it then. (midwife D)

The above story does not reveal the output, whether practice was changed or not, but it outlines how such a change might emerge and describes the external course – followed by the internal lecture as opportunities for learning and knowledge creation.

Earlier, external coursing almost entirely constituted the strategy for knowledge management in the hospital. When money is scarce, however, this is one of the first things that goes. Internal projects can, to a certain degree, substitute these courses, as have the two projects in the maternity ward (see further down). External courses are, however, seen as "vitamin injections" and an important field for inter-organizational reflection. Lack of opportunity to participate in external courses is seen as de-motivating and as the midwife says in the below quote, they are afraid of falling behind in their field.

Quote no. 6.2 -18

> A: Yes. Q: Have you taken any courses lately? A: No, not much in that regard. I have not attended a single course. Q: For how long? A: Well, a couple of years. Q: Is that unwise? A: Yes. Q: Is there a particular course you have wanted to take? A: No, well, I went last year – yes, I did – that is a course to help me develop in my profession; hear something new. What I worry about is falling behind; we do not get the big flows because we send back the difficult patients and do not have a lot of doctors coming and going, and it is a little hard to catch new things. Q: And now that is very difficult? A: Now that is very difficult, indeed. (midwife B)

Projects

As discussed above, project work is part of the strategy for knowledge management as seen from the management. Two major projects on the ward coincided with the performance of this study: the pilot-project of the introduction of the balanced score card and the re-certification as a baby-friendly hospital.

The introduction and implementation of the Balanced Score Card (named "Balanced management by objectives") started as a pilot project in the summer of 2004. The introduction of the Balanced Score Card was to be introduced as an extension of the PFR-work method in the new clinic. In the maternity ward, which is not a part of the new clinic, the process-based work method had not yet been fully introduced. They started at the other end – by introducing the balanced score card system first, and through this the reengineering process was initiated.

The members of the project group were quite confused after the meeting with the BSC vocabulary and its logic. This frustrated them a great deal, and this was expressed by the midwives especially who were as they say in the following quote, used to know what to do:

Quote no. 6.2 -19

> But there was very much frustration in that group, and nobody understood where the road led to and what we really were supposed to do… And we are used to knowing what to do! (midwife B)

The language used by the consultant A. and later by an external speaker who came to share her experiences from another hospital, was quite unfamiliar to most of the participants. "That which is not documented has not happened, been said, done or planned" (from the first day-seminar of the pilot project). The external speaker talked about reliability-tests and interrater reliability, validation, measuring the need for direct nursing etc. Time studies are emphasized: "how much time does the maternity care assistant use when going to the lab to have the umbilical cord tested" etc. Even though the participants are visibly or audibly confused, at least during breaks and when interviewed later, there are few critical voices. Even when time studies of nursing of different patient categories are mentioned, there is no open criticism of the methods or of the underlying assumptions.

The participants in the project group came from all three occupational groups on the ward, and the ward management was present. This turned into a vertical interaction that represented an opportunity for learning and knowledge creation and seemed to be used as such. Through the discussion on the indicators (to be used in the BSC project) discussions on practice emerged, for example: what does increased body weight do to the delivery process, what is the reimbursement for the antenatal consultation, and what does that mean that we can earn?[7]. Or increased redundancy with economy and accounting departments: "This contributes to talking the same language as economics" (participant). The issue of *Planned caesarean operations* was energetically discussed, since the number of elective caesareans is increasing etc.

Many of the concepts used during the mapping are up for discussion and operationalization. These are concepts well known to the participants; concepts they use every day like healthy mother, normal birth, when is

[7] An antenatal out-patients' clinic was opened in April 2005

treatment after delivery terminated etc. This illustrates one of the many long lines of collective reflection that take place during mapping and indicator discussions in this project. One of the outcomes was a proposal for 'therapy groups for women who have had traumatic first-birth experiences'.

In these meetings, the group uses the opportunity to discuss other issues. An example of a hot issue is the demand from patients for single-bed-in-patient accommodation. In the new clinic, which the maternity ward is not a part of, single-bed-in-patient accommodation has been an important feature. This is now used in marketing the hospital, and this becomes a problem for the maternity ward since it has mostly multi-patient rooms. This is linked to the problem of too many visitors (the husbands practically move in, and other visitors come at all hours), which is another issue discussed.

The project group and its meetings represent a place for the employees to interact and an opportunity to learn and create knowledge. Although the task is strictly related to the introduction of a measuring system, knowledge on practice in general is shared and developed in this context.

The other project was the 'Certification as a baby-friendly ward'-project. This is a result of the WHO/UNICEF introduction of the Baby-Friendly Hospital Initiative (BFHI), a global initiative to promote breast-feeding and early contact between mother and child at the hospital. The Norwegian version was introduced in the nineties. In order to be certified as a baby-friendly hospital, the hospital must meet the demands from the WHO/UNICEFS's 10 steps to successful breast-feeding[8]. The ten steps consist of simple and basic principles, like demand for a breast-feeding procedure, a plan for staff courses etc.

The certification process and the recent re-certification process have lead to a codification and formalization of existing practice: of what they actually do and how they help the mothers start their nursing. This has increased the consciousness of the staff (mainly the maternity care assistants have this as part of their tasks) on what is actual practice on breast-feeding on the ward. It led to a reflection on practice, which externalizes knowledge of practice. The maternity care assistant quoted below expresses that they became aware

[8] 10 trinn for vellykket amming.

of what they were doing through expressing it verbally and also writing it down. .

Quote no. 6.2 -20

> And, of course, we were supposed to be mother-child friendly – you know, that test. It was, indeed, very – we have just been re-evaluated. It had been ten years since the first time we got the approval, and naturally – they worked very hard on that. Some people took care of that, right, and trained us; we were in groups and we were examined by those who came from the National Nursing Center in Oslo to give us approval. And then we got – what was exciting was that we became conscious of many things, and that has to do with learning! – we were made aware of and had verbalized to us the things we had done for many years. Oh, yes. So that is why we think it is OK to do it this way! (maternity care assistant E)

Technology

One of the facilitators for learning and knowledge creation is introduction of new technological equipment. This works as a meeting point and a boundary object. Vertical interaction is created around the technology, and these communities consist of members from all levels of the hierarchy within the ward. New technological equipment contributes to a change of practice per se. Technical measuring processes substitute manual examinations succeeded by inferences based partly on tacit knowledge and hands-on experience. Through making explicit the potential difference between the results that the machine offers and personal judgments based on experience, it opens for collective reflection on practice. One example from this ward is a recently acquired surveillance system. This is an advanced system and they find it difficult to interpret the results. As in the quote below from the midwife demonstrates, they turn to each other in order to discuss the diverging results.

Quote no. 6.2-21

> A: Actually now, in conjunction with getting the new surveillance system, one automatically works much more together. Because then everyone is related to this and get messages on the screen. There is not always just one way to interpret these messages, and then it gets ….Like today when three people were involved with a birth. Q: In a way, the technology brings you together? A: Yes, actually. (midwife B)

The midwives are very conscious about not forgetting to "think" and use old techniques, and just blindly follow the results or recommendations that the machine gives. And this consideration also calls for interaction and discussion of the case in question. However, some of the older midwives are pessimistic about keeping the old hands-on skills alive and continuously

share it with newcomers, and the new technology is therefore also seen as a possible obstruction to the sharing of knowledge, as the manager expresses in the following quote:

Quote no. 6.2-22

> We of "the old school" try to tell the younger ones that 'now you must learn from us, now you must learn from the older midwives. Listen with the wooden stethoscope before you turn on the technical instrument. Feel with your hands before using the ultrasound; use your own judgment about how things are. We try to do that, and it is a little difficult because they dare not let go – they dare not trust themselves. (assistant manager/midwife C)

New technology also serves as an eraser of the differences between the professions. When new technology is introduced, both midwives and doctors need to learn how to use it – and that puts them on an equal footing.

Quote no. 6.2 -23

> It has been real fun because we started out as equals. All the doctors have to go through it and all the midwives. We have to read the same literature and take the same exam; and have to pass. So – and we talked the same language then. And now we are turning it around – if I have used this system and watched over a baby, we discuss the result of the shift, and discuss whether we should do this way or that. I think that is kind of exciting – we really like that because then we speak the same language. And we are just as important as they are, and then some. If you can say that doctors ask midwives about something, then, yes, they do regarding ultrasound. We have someone who has a special ultrasound education, an ultrasound midwife, as they call it. And then they may ask, although that is a difficult threshold to pass. To ask a midwife, that is. (assistant manager/midwife C)

The new technology brings the different occupational groups together to discuss the measurements and the test-results, and the midwives will feel equal to the doctors and they speak the same language.

In this chapter I have given an overview of the opportunities for learning and knowledge creation in the maternity and gynaecology ward. This review shows that there are opportunities both within the various occupational groups under study and in vertical interaction. However, there seem to be salient conditions that obstruct these interactions as opportunities for learning and knowledge creation. This is what we will take a closer look at in the next chapter.

6.2.2 Barriers to learning and knowledge creation

From the identification of the opportunities for learning and knowledge creation in the previous chapter, several elements emerge and seem to matter in how the opportunities for learning and knowledge creation can be utilized for just that. The way work is divided emerges as salient for either facilitating or obstructing learning or knowledge creation on this ward. Contrary to the analysis of the other units under study, which will follow after this chapter; there does not seem to be much emphasis on the physical layout as an obstruction of the opportunity for learning and knowledge creation in this unit.

There is a strict division of labour between the two occupational groups under study in this ward, the midwives and the maternity care assistants. On the maternity ward, the autonomy of the midwife is legendary. She herself perceives her autonomy to be high, and the maternity care assistants, who are below the midwife in the hierarchy, have an identical view. The midwives also perceive that they are almost equal to the doctors, as one of the midwives expresses in the quote below.

Quote no. 6.2 -24

> Midwives are a little different from nurses. We are used to making decisions on our own. We probably speak more on the same level as the doctors. (assistant department manager/midwife C)

This perception is due both to their long training and to how autonomous they are in their main task performance which is delivering babies. The midwives are the "queens" of the delivery rooms and only want advice if they ask for it. They will consult each other at length before they call for the doctor on duty to help them with a difficult delivery.

The assistant manager urges them to watch each other in order to learn from each other, but she is reluctant to introduce participation during deliveries as a formalized demand. Instead this is put forward for instance in staff meetings. The midwives are aware of this appeal and they seem to understand that it is motivated by learning objectives. The consideration for the patient is emphasized in the question of the mere presence of several midwives in one delivery room. They do not think that the patient will have enough energy for that many people in the room. As shown in the following quote, the midwives may consult their peers on specific problems but not ask them to observe in general. It seems that that the younger midwives have a more positive attitude towards the presence of peers during work than the older ones.

Quote no. 6.2 -25

> Q: Are there some who would not like that, do you think? A: Yes, I think so. Q: Do you think it happens often? A: Midwives always want to square things out efficiently; that is not always for the best, but the younger ones are more open to it; the older ones – even though they could use it. It is not just sheer unwillingness. It is more an understanding that we divide the work and you take responsibility for this and you for that. So, unless we ask for help… Often, we bring a midwife and say: Look here. What should I do? What would you have done? Or we will have a chat if I have someone around with a few problems. But to follow up and be there and be near and things like that, of course, you can not expect that the birthing woman has the resources to turn to several midwives. She should be allowed to rely on just a few. It is a little like that. This is a very personal and difficult situation and you do not want people in and out all the time. It is a little bit about that too. (midwife B)

To deliver a baby is obviously a very stressful situation not only for the woman in labour but also for the midwife, who is in charge and is responsible. Furthermore, there is also a hesitation to invite another midwife into the delivery room to ask for her opinion on a problem because it is feared that the colleague will dominate the situation. One of the midwives says that she has experienced a colleague taking over *the whole delivery* when asked to come into the delivery room to reflect on a problem.

They are reluctant to discuss practice with the maternity care assistants and do not feel that debriefing incidents from the delivery room belong in a public space.

Quote no. 6.2 -26

> We have the debriefing we talked about earlier today. Some experienced that as difficult, in fact. I think it is fine. But some find it difficult because they feel it does not belong in public …. But I feel it is important to stand up to what one does in this profession… (midwife B)

This reluctance to reflect on incidents is also an obstruction to learning from previous mistakes. The fact that the hospital, and the ward, is relatively small means that the number of deliveries is quite low and the midwives do not have that many deliveries each per year. Reflecting on mistakes is seen as an opportunity for learning and knowledge creation by the management, reinforced by the fact that the midwives relatively seldom in the course of a year actually delivers a baby. There are 21 midwives (full time equivalents)

and 800 deliveries per year.[9] This means that each "full-time-equivalent-midwife" has about 30 births a year. The average number of deliveries per midwife means that she does not experience very many deliveries each year if she only attends those she is responsible for. Reflecting on deliveries, and mistakes, made by colleagues are opportunities for learning.

The division of work in this ward has strong roots in the character of the professional autonomy on the part of the midwives and this seems to obstruct the opportunity for learning and knowledge between the two occupational groups; the midwives and the maternity care assistants. The way labour is divided contributes to the task autonomy for both groups, although the task autonomy for the maternity care assistants during deliveries is low. The midwives have high professional autonomy and high task autonomy. The maternity care assistants have high task autonomy in general and high occupational autonomy in their work with breast-feeding.

From a knowledge perspective, the mix of the two patient groups seem to be advantageous, since the gynaecologist have their tasks pertaining to both of these patient-groups and the midwives have their main tasks with the women in labour. This means that during treatment of the gynaecology patients, the physicians and the midwives, each with expertise from different angles and only partly overlapping, are brought together. In the delivery part of the ward, the physicians will mainly have contact with the complicated deliveries and Caesarean operations, the normal births are left to the midwives. It is, however, difficult to arouse the midwives' interest in gynaecology, even though obstetrics (childbirth) is closely related medically to gynaecology. This may be partly due to the fact that when the midwives work with gynaecology patients, they have more of a role as a regular nurse, even though trained as midwives.

They put forward several reasons for not following this request from the management: it is time-consuming to have two midwives on one delivery, the woman in labour may object, and it is believed that some midwives would be uncomfortable having a colleague in the delivery room etc. The presence of the patient apparently complicates matters. If suggestions for action are made within earshot of the patient, this creates anticipation and it can be problematic if there is disagreement and perhaps rival suggestions.

[9] For comparison, Ullevål University Hospital, the biggest hospital in Norway, has 155 midwives and 6558 deliveries. This means that each midwife on an average is responsible for 42.3 deliveries per year (figures from 2006).

Collective reflection, tossing of ideas and disagreement is difficult in front of a, usually apprehensive, woman in labour. The midwives are in and out of the delivery room during delivery, to fetch things and perhaps they have several women to attend to, and they will discuss matters and ask questions while passing each other in the corridor.

To sum up, the obstructions to learning and knowledge creation on this ward seem to be the historically contingent role of the midwife as an autonomous professional and the division of labour as a consequence. Further there is a lack of routines for de-briefing, which appears to be an obstruction to learn from failure. Both these points seem to be mixed with power issues.

6.2.3 Summary

In the maternity ward, the opportunities for learning and knowledge creation horizontally emerge in the break room where the midwives spend their time between births and in between other tasks. They also interact in the passing, where they take the opportunity to ask each other questions and give or ask for advice. There are few opportunities to interact horizontally during the actual task performance.

Vertically there are opportunities for learning and knowledge creation during task performance (midwife/maternity care assistant), and during breaks, project work, meetings, and internal and external courses. Introduction of new technology also represent an opportunity for both horizontal and vertical interaction.

The obstruction to learning and knowledge creation on this ward seem to be the division of labour and connected to this is the professional contrast which appears to be historically determined.

6.3 The cardiac ward

The cardiac ward has 18 single-bed-in-patient rooms, and it is physically and administratively divided in two "yards" [10], each with nine single rooms. Two and two yards constitute what they call a *pair-yard*, and each *pair-yard* has its own department manager. In each yard they have an average of 9.25 employees, nurses and nurse's aids. There will be 2-3 nurses/nurse's aids on duty at the same time. The doctors are organized in a matrix in relation to the

[10] Norwegian: tun

wards and their offices are located in the old vacated building, quite a distance from the wards. They come to the ward during rounds and whenever there is a particular matter to tend to.

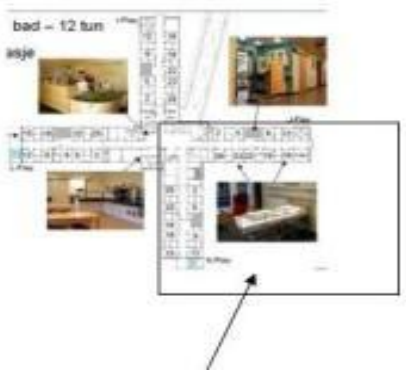

Figure 6-2: Cardiac ward marked as a square (lower right)

The employees are employed in one specific yard, but if they are needed on the other yard (in the pair) due to lack of personnel one day – they will be called to work there. The receptionist and the cafeteria, operated by the kitchen aid, serve all four yards on the floor. They also share some treatment rooms, storage rooms and cleaning facilities. The layout of the new clinic has been explained in detail further up (chapter 5.1). The patients on this particular ward mainly suffer from heart related diseases, and quite a few of them will be 'revolving-door-patients', meaning that once they are discharged, many of them will return for the same or related reasons.

In the cardiac ward they have solely single-bed-in-patient rooms. Single-bed rooms for patients as an objective, has been a hot political issue in Norway for some years. It was actually an election promise in the last national election campaign (2005). Overall the patients and the employees are very pleased with single-bed rooms. It gives more privacy, both in the treatment and when they receive visitors etc., and it lowers the risk of contagion.

Given this information about the ward and its employees, in the following I will describe the opportunities for learning and knowledge creation on this ward.

6.3.1 Opportunities for learning and knowledge creation

The wards are relatively small with nine patients each when it is fully booked, and 3-4 nurses and nurse's aids. In the morning, nurses from both of the pair-wards will meet up together at one of the wards. If there is a

shortage of staff in one of these wards they will make alterations so that both wards are properly staffed. The design and architecture of the wards are only slightly different and most of the nurses know each other from working together in the old clinic. Through this flexibility they will gain experience from working in a slightly different environment, and the circle of colleagues is extended.

Horizontal interaction

The staff on the pair-yard (ward) will meet in the morning for a joint meeting, then part and continue with report in each yard. There they will divide the patients (or the rooms) between them, and there is a certain opening for stating preferences, for instance if they want to continue nursing patients that they have nursed on duty before. On the other hand, they can prevent that the same nurse end up with the difficult patients continuously.

Report has been altered due to the new working procedures introduced with the Patient Focused Redesign. From a verbal transfer of information and knowledge they have moved towards taking turns reading the files. Still, information characterized as – of "less importance" is shared face to face during the report. Like in the instance where a nurse's aid has seen that a patient has looked poorly, but finds it difficult to write down exactly what she means. What the nurse's aid is saying in the following quote is "she did not look too good, perhaps it is nothing, keep an eye on her":

Quote no. 6.3 -1

> No, because it may be that you could say: maybe she is a little semi-conscious. In other words, you can't write it because you don't know whether the patient is semi-conscious. In some cases: can you observe a little - things like that, - which I feel perhaps is a bit unclear. Or maybe she is that just now, or perhaps just woke up or slept poorly. Anyone can feel a little out of it when just waking up. So, it is things like that, nothing more important. Because the important things are always written down. (nurse's aid V, cardiac ward)

Except giving out the medicine, the nurses and the nurse's aids do about the same type of tasks. Only the registered nurses (in addition to the doctors, of course) can give out medicine in Norway. One by one they disappear into the single-bed rooms and during the working day that follows, they rarely see each other, or if they do they see each other when the tasks are done and in between tasks. As the nurse below explains, they do not observe each other in action.

Quote no. 6.3 -2

> Q: But you do not go in there together? A: Not at the same time because we go into our own rooms first and do hemoglobin percentage and pulse, hand out towel and wash cloth and talk with them a little in the morning. But the nurse goes in with medicines before breakfast. The nurse's aids are independent. (nurse G, cardiac ward)

The middle managers on all three floors in the new clinic (six of them all together), have been very conscious about creating a common space for themselves as a group. They meet three times a week, half an hour each time. There is no set agenda, but the meetings often include external (to the group) participants, among these their superior.

Quote no. 6.3 -3

> Q: But there is an agenda for the meetings? A: No. It is just like: you may say that sometimes it is – the whole hospital knows that we meet at this time, and if someone wishes to inform about some new routine it is known that we meet there. Then they send an e-mail saying that they will be there at nine-thirty. This then becomes the agenda for the day. (department manager F, department U)

There is a high level of overlapping knowledge between the participants in this meeting and there is collective reflection going on. They feel that they can take their problems to this meeting and discuss it with their peers.

Quote no. 6.3 -4

> It was possible to air questions about difficult staff, for instance: how did you do those conversations, what is a good way to do it, and what is not? Have you heard about something, do you have contacts there? And if you have problems with the shift program you ask: Can you help me? A lot is like that. I think this is a good thing. Among others, you feel that as long as you have the same problems we can back each other up from – well, frustration. It is not always easy to do this job. (department manager F, department U)

In this chapter I have identified the opportunities for learning and knowledge creation in horizontal interaction. I have regarded the interaction between the nurses and the nurse's aids as horizontal since they do more or less the same job. This will be summarized at the end of the chapter. I will now move on to identify interactions that constitute opportunities for learning and knowledge creations vertically, between employees on different levels in the hierarchy or from different occupational groups.

Vertical interaction

In this chapter I will start out by describing vertical interaction during hands-on task performance, and then move on to describe vertical interaction in a wider perspective on the ward.

The nurses on the cardiac ward interact with several other occupational groups in the hospital. Doing the rounds with the medical doctor in charge is a daily task that they participate in. The doctors come to the ward anywhere between nine thirty and twelve o'clock. When the doctor arrives, the nurse should be ready to go into the patient with him or her. Most of the nurse's tasks will be outlined by the decisions made by the doctor before, during and after the round, and it is therefore crucial to her that the doctor arrives as early as possible. If not there will be a lot of stress afterwards, since there is little time to get the tasks done before the shift ends.

The procedure for the rounds has been changed, formally, as a part of introducing the processual way of working (patient focused re-design). Previously they had pre-rounds, where the doctor and the head-nurse would discuss the patients before they entered the room. Further they had post-round meetings, where all the tests etc were decided and booked. In the new procedure for the rounds the pre-round meeting is eliminated. The new procedure is simpler and the idea is that most of the discussion and the making of the diagnosis should take place in the patient's room with the patient present. When the doctor arrives on the ward, he or she is supposed to grab a laptop and enter the patient's room right away with the nurse. This does not happen, however, and most of the making of the diagnosis and ordering of tests happen after they have exited the patient's room. In the quote below a nurse's aid explains how the pre-round meeting was re-introduced when one of the doctors, who was very eager to cut it and replace it with direct rounds, quit.

Quote no. 6.3 -5

> The idea was when we moved over here not to have pre-rounds. You know what that is? Yes. We were supposed to do direct rounds. But now that doctor has left. Q: The doctor left? That means you can no longer do the direct round? A: Correct, it is not possible then. Q: And you think that is unwise? A: Yes. Q: But what is it with the pre-round that the doctors want to keep and you do not? A: A waste of time. We do not have time for it. (nurse's aid V, cardiac ward)

The nurse reads the journal when she starts work and the doctor is supposed to read it when she comes to the ward. There are several indications that the procedure where the pre-round is eliminated is not followed, and that the

doctor still wants to ask a number of questions before they enter the room. There are, however, also indications that the nurses find this a waste of time. They do not want to talk to the doctor before they go into the patient. The nurses do not see any added value in this face-to-face interaction. They say that the doctors should read the codified information in the journals first. And they feel that they can do the talking while they are with the patient. In the quote below a nurse expresses that this is partly because she feels that they first have to feed the doctor the information that is already in the journal, and only after this can they discuss the patient.

Quote no. 6.3 -6

> Q: In other words, you did not have pre-round? A: We did after she had been prepared a little. Instead of me feeding her with information, she can read it first and thus be prepared, and then I can talk with her. We did that. (nurse G, cardiac ward)

During the round in the patient's room, the nurse will often act as a mediator between the patient and the doctor. She will ask questions that the patient has asked here earlier and that she could not answer then. Or she might know the answer, but she wants the patient to hear it from the doctor. This way a collective reflection can be initiated. The rounds are followed by post-round meetings, where the different tests that have not been ordered by the doctor before the round, are ordered. The nurse will place these orders. This was previously a task for the receptionist, but the physical distance to the receptionist makes it inconvenient to ask her than to do it herself. Plus, they have been instructed not to ask her to do it.

The rounds made by the doctor and the nurse constitute an opportunity for interaction and for learning and knowledge creation. Now we move on to identify vertical interaction in general on the ward.

Meetings

On the ward there are very few frequent meetings except for the report. Staff meetings are large and usually function as a field for diffusion of information top-down from the management. Results or suggestions from project work can sometimes be discussed at staff meetings, and can be seen as learning and knowledge creation. One example was a suggestion that came up in a project on problematic absence. A suggestion on how to solve this was collectively reflected upon in the meeting, and it was decided to try out the suggested solution.

In the management meetings for the whole clinic, the top management and the leading physicians meet – and with the middle managers from the wards.

The middle managers must leave the meeting after a certain time. During the time they attend, the focus is very much on a strict agenda of economy and top-down pieces of information, whereas after they leave the agenda seems to be less tight and more open. The internal consultant reflects in the quote below on this opportunity for learning and knowledge creation:

Quote no. 6.3 -7

> A: Yes, of course they have meetings. Q: I have, indeed, attended some of those meetings. A: Yes, you have, so you know that after a while the middle managers have to leave the room. Q: Yes, they have to leave, exactly. I have gotten the impression that ….A: Not everything in that model is – not everything facilitates good development of knowledge. Some of that structure puts obstacles in the way also. (internal consultant S)

Having identified the formal meetings on the ward, I move on to more informal interaction, like lunch and breaks.

Lunch and breaks

The personnel lounge in the new clinic (there is one on each floor) is located in 'the middle core', which means that employees from four different yards (wards) share this lounge. The location is central and right next to the reception area and the patients' dining room. Bringing these employee groups together creates a problem of client confidentiality, and it is difficult to discuss work related subjects without including some sensitive information about the patients. As a nurse explains below, the lounge/employee dining room is close to the public area and does not seem very fit for discussing patient-related issues.

Quote no. 6.3 -8

> The dining room, and this goes for all the wards (yards); because of the code of silence we cannot discuss our patients with staff on other wards. We miss being able to talk like that. (nurse G, cardiac ward)

Courses

Internal and external courses constitute meeting places. The internal courses are often taught by specialists from other wards, from the surgical ward for instance. The courses constitute a space for interaction and opportunity for leaning and knowledge creation (including, or perhaps especially the breaks) and represent time-out from the daily routine. This includes also the breaks when they can talk to the other course participants; it is nice to have some time to talk, says one of the nurse's aids. There might be a difference in how this is perceived by the different occupational groups. The nurse's aids say that there are not many courses for them, that there are more for nurses, and

that they do not often take external courses. At the same time, the nurse's aids feel that the internal courses cover their need, and assert that they should be mandatory.

Projects

The Patient Focused Redesign project, accounted for in chapter 6.1, absorbs a lot of the attention when it comes to talking about projects in this organization. The planning of the redesign project and the implementation of it in the new clinic has largely been organized through many small projects. They are having severe problems in establishing all the new teams that are supposed to play a vital role in the new way of working. The process-team for instance, which is to be responsible for the overall monitoring of the main treatment processes, have been very hard to establish in general. This is a "ghost topic" at meetings on all levels and wards. The managers experience that this task of getting the projects teams up and running is solved very slowly, if at all. The top manager of the new clinic says that she feels like she works against the current in trying to implement these project teams – or as she puts it in the quote below; she *pulls the horse behind her*:

Quote no. 6.3 -9

> Q: What have you discussed the most lately, corridor patients? A: We have discussed corridor patients a lot. And we have discussed the readjustments; they keep coming up. The establishment of the process team; how to get it done because, - it moves very slowly. I have to pull, like an old woman I am pulling a horse behind me. (manager P)

There are also examples of projects of a different character, for instance related to HRM issues like absenteeism. Project members are recruited vertically, and it appears that these projects function as fields for knowledge sharing and collective reflection on the issues to be solved. Below is a story from this ward about how a smaller project on absenteeism was initiated. It was a bottom-up project and was implemented.

Quote no. 6.3 -10

> A: Some projects. And this was actually my suggestion: a crisis solution. The solution entails calling those who live nearby at any time. Of course, they can say 'no', but those who come on short notice will get comp time: one hour on, two hours comp time. Then you could also take comp time during day shifts. Q: In other words, you want to make a more favorable arrangement in order to get the extra shifts. A: The difference from that crisis arrangement was that you did not do the whole shift. They might call you at five in the afternoon – the shift begins at two-thirty – so that you were there from five until eight. Q: Just to take the top. A: Yes. If you were tired, that is, if you were not feeling well one day you might think: I

> don't feel like going to work because I know it is going to be really busy. Then, - and that is the way it was – some might choose to stay home. That is when we figured that if someone could come to work for a short period of time, more people might come to work. Q: That they called someone to come in? A: No, that you went to work knowing that you could call someone to come in and help out. And also, many had full time jobs, or…. They were not allowed to work extra shifts and had to hire in extras. Then you get the whining, right, when you work more than full time. (nurse's aid V, cardiac ward)

The focus on projects as the no. 1 learning tool is emphasized by the middle manager in the cardiac ward. She says that there is very much focus on learning and a large interest for learning new things in the organization, and exemplifies by explaining how they plan to introduce two new technical remedies ("two large projects") on the ward. There are large educational programs tied to this new technology.

Above I have described the opportunities for learning and knowledge creation on the cardiac ward. The frequency for the horizontal interaction does not seem to be very high during the hands on task performance. The report between shifts and the department managers' formalized thrice-a-week-meeting seem to form opportunities for learning and knowledge creation. These two horizontal sites of interaction appear to have opposite characteristics. During report, sharing information by means of written material at the sacrifice of verbal communication seems to be emphasized, while the department managers' meetings are agenda-free zones with a high level of trust between the participants. The conditions for learning and knowledge creation are different.

The vertical interaction seems to be the rounds, meetings, lunch and breaks, and project work. In this study only the nurses were interviewed (and not the doctors who is the opposite party in the interaction in connection with the rounds) and they do not seem to consider the rounds, or the meetings before or after as opportunities for learning. The more general meetings can sometimes offer these opportunities, but are mostly for giving information from the management. Lunch and breaks offer few opportunities due to obstructions that I will investigate further below. Courses and projects, especially the latter, seem to be opportunities for learning and knowledge creation, but there is a problem of getting the projects established in the midst of every day work. Other than the rounds, most of this interaction happens away from the "hands-on" task performance.

Already in this identification process we have seen glimpses of some of the obstructions that seem to hamper these opportunities. And this is what will be the focus in the next chapter.

6.3.2 Barriers to learning and knowledge creation

In this chapter my attempt will be to identify obstructions to the opportunities identified in the previous chapter on the maternity/gynaecology ward. Similar to the previous chapter, the division of labour seems to stand in the way of the opportunities for learning and knowledge creation. Unlike the maternity/gynaecology ward, however, the physical layout of the ward seems to play a role here. These two obstructions will be elaborated on in this chapter.

Division of labour

Due to the new way of organizing the tasks, which to a high degree leaves it up to each employee to organize her day, the fixed time for breaks and lunch have disappeared. This means that lunchtime has become less a meeting place. They are very flexible, and plan their day according to the patient's need, and there is no such thing as "out to lunch" for the nurse. The department manager quoted below describes this flexibility and says that sometimes they skip lunch all together.

Quote no. 6.3 -11

> A: Otherwise I can't think of arenas where one meets. And then it gets to be by chance, because one eats at different times since the work assignments dictate when you can eat. It is very much like that. Earlier, it was pretty much determined; between 11 and 12, the staff divided the break between two groups. They don't do that any longer. Q: More flexible? A: Yes, and as a result many do not get to eat, they do not get the break because they are working on the assignments. (department manager F, department U)

In hands-on situations, in the actual nursing of the patient, they rarely cooperate, but they use the time gained through working alone for a chat and perhaps reflection *on* practice. The wards are small with few patients and few employees, and quite far (even with the help of scooters) between the wards. They simply do not bump into each other frequently. Below, a nurse's aid reflects on the difference between before (in the old building) and now (in the new clinic) as far as the frequency of interaction:

Quote no. 6.3 -12

> Q: When you think about how you worked in the old post and how you now work in the new clinic, do you think you work more or less with

someone else now? Oh, less, of course. A: Yes. Less. There we had - we were many nurse's aids in a group, you may say. We shared a common area in the kitchen and the lounge, which were across from each other. Of course we worked more together then than now. Q: But do you enjoy it a little? Or is it not so good? A: I miss it a little, really. But I can walk over to the other ward (yard) and sit there for a bit – nobody tells me I cannot. We will call each other before nine-thirty and suggest having a cup of coffee, and things like that, but it is still not the same. I probably feel that I work more independently now, and I actually like that too. (nurse's aid V, cardiac ward).

Although the current information flow is kept running between them as they see each other in the hallway and thereby solving urgent treatment matters, the opportunity to plan more long term, even if it is not a problem or and urgent matter, suffers.

A softening of the differences between the professions is an effect of the way the tasks are organized. This leaves groups like the nurse's aids in a more autonomous role than before they moved to the new premises. There are two, perhaps contradictory, outcomes to this slide towards conflation of the two occupational groups: They work more alone and have more autonomy in the actual task performance. On the other hand, they work more alone and can find themselves *too alone* in difficult situations. As one of the nurses in the quote below describes; she likes working alone, but not when she feels uncertain:

Quote no. 6.3 -13

I think it was good – I think it is best to work together when seeing patients that I feel uncertain about. Now I like it, but when I feel uncertain…. (nurse G, cardiac ward)

This is a matter that also occupies the manager. She is worried that they try to accomplish too much on their own, and like she says in the quote below, she stresses the importance of interaction and dialogue.

Quote no. 6.3 -14

Well, what is important is to be able to check with colleagues when it comes to patient situations regarded as difficult. To be able to get help when needed in a situation. I think many choose to make things difficult for themselves instead of waiting for someone to be available to help. This way, an individual may experience a heavier burden. Also, I think it has something to – it has to do with knowledge development – experience. To have a dialogue. The work environment – i.e. fellowship. To experience the feeling of being socially secure when coming to work. That has not been taken care of. It is about finding an arena to have the opportunity, even though one works alone a good bit of the time, one has to have some

> shared get-togethers . Knowing that one has that possibility is important I believe. (department manager F, department U)

There are divergent perceptions of the round and the meetings before and after as opportunities for learning and knowledge creation. The purpose of the new procedures for the rounds (with no pre-round meeting) is to move most of the reflection and discussion into the patient's room and include the patient in the discussion. According to both management and the nurses, there is very little that cannot be said and discussed when the patient is present. Still, the doctors will often insist on maintaining the old procedure of pre-round meetings with the nurse. One of the nurses thinks that this is due to the doctors' need to have a diagnosis ready as she/he enters the patient's room. This nurse says in the quote below that she does not think that the doctor wants the reflection on the patient's condition to take place in the room with the patient present.

Quote no. 6.3 -15

> No, but they want – they have it in their heads that they need a definite treatment from now and to the end of January from the time they come into the room. Instead of obtaining information once in the room, both from the patient, from us and from the computer; then think about it and ponder while in the room, and then draw a conclusion. (nurse G, cardiac ward)

On the other hand, the nurses are in favour of the direct-round system and opposed to the pre-round meetings. The ICT and training department finds it odd that the nurses have a negative attitude towards the pre-round meeting. The new procedure is not followed. Either the doctors keep on insisting on the pre-round meeting or this space for vertical interaction is substituted by a horizontal space, on the doctor's part. The medical doctors meet three times a week before the rounds and discuss the patients, without the presence of the nurses. This is in accordance with the "Operating manual for the new clinic" which states: If the doctors need a short pre-round meeting for mutual de-briefing before the rounds, this can be arranged without involving the nurses (BellHospital(pseudonym), 2002).

The new procedures on transfer of information and knowledge about the patients focus on reading written reports and journals. Talking is not *safe* enough. They are afraid that important pieces of information will be forgotten in a verbal exchange, and in addition it is more time consuming. When the old shift is anxious to go home, the new shift will read the information in the journals and written reports, and not transfer face to face. However, there is a tendency to slip back to the old habits of talking together. One of the nurses describes the routines for giving report, how it is supposed to be – contrary to how it tends to be.

Quote no. 6.3 -16

> A: No, it has not been changed just now. It has been a while since it was. Q: What was it changed to? A: Well, that they had to read the reports first and then we came in at the end of the shift. Because earlier, there was an oral report more or less. It was not supposed to but things lapsed. Q: When things lapse, what is it that lapses? A: Some want an oral report instead of reading it. Q: So, it is not that it should not be written, it is just that they want it verbally. But why does that mean it lapses? Does it take too much time, or? A: Yes, it is not as safe, because if you forget to mention something, they won't know and they miss some information. Now, you can write a little during the day. Q: They do not have to read too much, or? A: No, and they should be able to put up with reading what concerns the patient. (nurse G, cardiac ward)

Still, knowledge or information characterized as – of "less importance" is shared face to face during the report. Like in the instance where a nurse's aid has seen that a patient that has looked poorly, but finds it difficult to write down exactly what she means. What the nurse's aid is saying is "she did not look too good, perhaps it is nothing, keep an eye on her".

Quote no. 6.3 -17

> Q: Yes. But it is not like: you didn't say that, and: it didn't say that there. A: No, because it may be that you could say: maybe she is a little semi-conscious. In other words, you can't write it because you don't know whether the patient is semi-conscious. In some cases: can you observe a little - things like that, - which I feel perhaps is a bit unclear. Or maybe she is that just now, or perhaps just woke up or slept poorly. Anyone can feel a little out of it when just waking up. So, it is things like that, nothing more important. Because the important things are always written down. (nurse's aid V, cardiac ward)

Physical layout

On the cardiac ward the informants seem to be aware of the significance of the physical layout. This is probably partly due to the fact that they have recently moved to new premises which are notably different from the old building that they moved from. In the cardiac ward they have solely single-bed-in-patient accommodation, and this constitutes a change for the employees as well as for the patients. Overall the patients and the employees are very pleased with single-bed rooms. It gives more privacy, both during treatment and when they receive visitors etc., and it lowers the risk of contagion. Single-bed rooms separate the patients from each other physically, and limit the number of personnel that enter this specific room since there is only one patient to tend to in there. One of the receptionists says in the quote below that the patients that are poorly appreciate the single-

bed rooms, but when the patient starts to recover, she or he finds it a bit gloomy and dreary all by her/himself in a single-bed room.

Quote no. 6.3 -18

> Q: Yes, right. But is it better for the patients? Is it good for the patients to have single-bed rooms or – is it good? A: Very many think it is all right. And when they feel very poorly they really appreciate it. But when they are well, when they start getting better, then they think – many think it is a bit sad. Q: Yes? A: They hardly see any people or anything, there are very few in the corridors where the patients are. There are three or four nurses. And they are busy in their rooms, right. And you do not have the bell, the ringing… Q: Not a sound at all? A: No, and many think that it is very quiet – and things like that. (receptionist J)

Not only are the patients separated from each other; the employees are also separated from each other in carrying out their tasks. If they, as they sometimes also do, go into the single-bed room together, this means using more time for the nurse, since she also has to give *all* the patients medicine. It takes less time when they divide the patients among them. That way, as the nurse below explains, they might have time for a chat afterwards.

Quote no. 6.3 -19

> A: How much they talk is very individual, but when it is necessary we try to talk. That is the custom, it is allowed, it is OK and it is nice. Q: But are there some who say: you have to do that, or some who are aware of it quite consciously? A: Yes, we were very much aware of it in the beginning when we re-organized because we had informal meeting places earlier. While now we have our own patients all day, then we were preoccupied with – that's what we said – I was part of the re-organizing and had responsibilities there. Then I said that we have to talk to each other and about the patient; we should not have the sole responsibility. However, we have not been able to have those regular meeting places, but, at the same time, we talk more or less constantly. (nurse G, cardiac ward)

The wards on the new clinic do offer physical spaces as opportunities for interaction. The ward has two meeting rooms, one shielded and one more open, where the employees can meet, both formally and informally. The doctor and the nurse can for instance discuss the patient after the rounds in a shielded area on the ward where they also have computers. The management says that they did not deliberately think of common physical spaces when the building was planned. However, for at least two reasons, informal interaction rarely happens in these spaces: (1) there are very few employees on each ward (yard), the distance to the next ward is long, and (2) combined with their autonomous organization of the daily tasks and routines, and they seldom bump into each other.

The informants perceive that the regular meeting places have changed after they moved to the new clinic, and even the interaction at lunch has a different form and content now since several wards share a lunch room. In addition, this lunch room is located in the reception area, and is quite open and accessible for the public. Both because of the public and because of employees from other wards, this space does not function as a site to discuss the patients or patient-related issues – due to privacy issues (taushetsplikt). The hospital is located in a small town; most people know or know of each other, and very many people are related. This means that they have to be very careful about the privacy issue. They miss being able to discuss the patients with the colleagues, and at the same time ensure that the privacy is protected. As a result of this the lounge is not used by a lot of employees. In addition several of them skip lunch. Lunch time is part of the single employee's planning of the day, and not at a set time when they know that they will meet their colleagues and when everybody is present.

The old ward had a more centralized character than the new one has. The staff all met around the kitchen and the personnel lounge, which were located right opposite each other. It seems that the mere fact that they were physically proximate meant that the staff had more interaction in the old ward than they do now. The horizontal and formal entity that the ward in itself constitutes has also to a certain degree lost its formal shape due to large distances and individualized daily routines. The middle manager has a hard time finding her staff when she goes out of her office and into the ward, and she also finds it difficult to gather them for different purposes. The "natural communication" is suffering, she says in the following quote:

Quote no. 6.3 -20

> And we see that the communication we had earlier as a group, as we were many in a ward corridor; that is gone. Now we are maybe three or, at the most, four on a ward (yard), and many are staying with the patient. Thus, the natural communication we had earlier is gone. And to get that group together is more difficult now than it was in the old building. So, because - and we have talked a lot about that, and I am saying that when I have a free moment - I like to go and find out how things are going and if there is anything special, - nobody is there. Because then they are with the patients and I will stand there and wait to see if anyone is coming, but nobody does. Therefore, you may say that the arenas that I feel I should have had are now missing. (department manager F, department U)

In this chapter on obstructions to opportunities for learning and knowledge creation I have identified obstructions in three categories: view on learning and knowledge, division of labour and physical layout.

The view on learning and knowledge becomes visible through the development of sites like the rounds and report where there is an increasing emphasis on transfer of information and knowledge by means of written material, while the sites of verbal communication are downsized. They are substituted by requests for reading; reading journals and reports, i.e. an emphasis on classified information and knowledge, transferred in a codified form

Division of labour seems to obstruct the opportunities for learning and knowledge creation through the high degree of autonomy that the nurses have to organize their day, albeit in agreement with the patients' needs. This obstructs opportunities to interact informally during breaks, during lunchtime etc. How the work day is organized becomes a matter between the nurse and the patient, and the relationship between the nurse and the specific patient is isolated or privatized, and the nurses' paths do not cross.

The physical layout of the spacious ward, with few on single-bed-in-patient rooms and accordingly small staffs, seem to obstruct the opportunities for interaction indirectly through how it affects division of labour and sites for interaction for the staff.

6.3.3 Summary

In the first part of this chapter the opportunities for learning and knowledge creation in the cardiac ward were identified. This identification process showed that the frequency of interaction seem to be low during the hands on task performance, both horizontally and vertically. The vertical opportunity during hands-on task performance that was identified was mainly *the rounds*. Meetings, lunch and breaks, and projects can be added as further vertical opportunities.

The nurses in the cardiac ward do not mention technology as a place where interaction takes place and as an opportunity for learning and knowledge creation. I can only speculate as to the reason for this, since a modern cardiac ward is likely to have a high degree of constantly new technology. One reason might be that this is so much a part of their daily work that they do not think to mention it.

The obstructions identified on this ward were grouped in two categories. These categories are (1) division of labour, and (3) physical layout. These categories are however intertwined and they seem to reinforce each other. The division of labour will be influenced by the physical lay out, for example through how the work is organized when the ward has only single-bed rooms. And this may be an obstruction since it inhibits interaction.

The units selected for this study are two wards and two support staff units. It was designed like this in order to compare the two different categories of units and examine whether there are differences or similarities in the opportunities they have for learning and knowledge creation. In the next chapter I will therefore set out to identify opportunities for learning and knowledge creation in the support staff units. This will be both in order to 1) further fill in the picture of where learning and knowledge creation takes place, and 2) to contrast the two different types of units (support units and core units).

6.4 The receptionists in the new clinic

The group of receptionists has four members. Three of these are actually receptionists on one floor each in the new clinic, and the fourth is secretary to the clinic manager. This occupational category did not exist in the previous organization when situated in the old building. The physical layout was quite different, and there was one receptionist on each ward. Some of those that now hold receptionist position used to work on the old wards.

On each floor in the new clinic there is an open space in the middle of the "cross" (see figure 6.3). This is reception area for the floor and this area is called the "Middle Core" in the new vocabulary introduced with the new clinic. Each floor has four wards, with 36 single-bed-in-patient rooms in total. The receptionists serve all the wards on the floor. The receptionists are subordinates to one of the deputy directors in the new clinic. They are organized as their own group, separate from the employees on the wards.
Figure 6.3 shows the layout of a floor in the new clinic. The location of the receptionist in the "Middle Core" indicates a very central role physically, as information centre and knowledge activist.

"The Middle-Core"

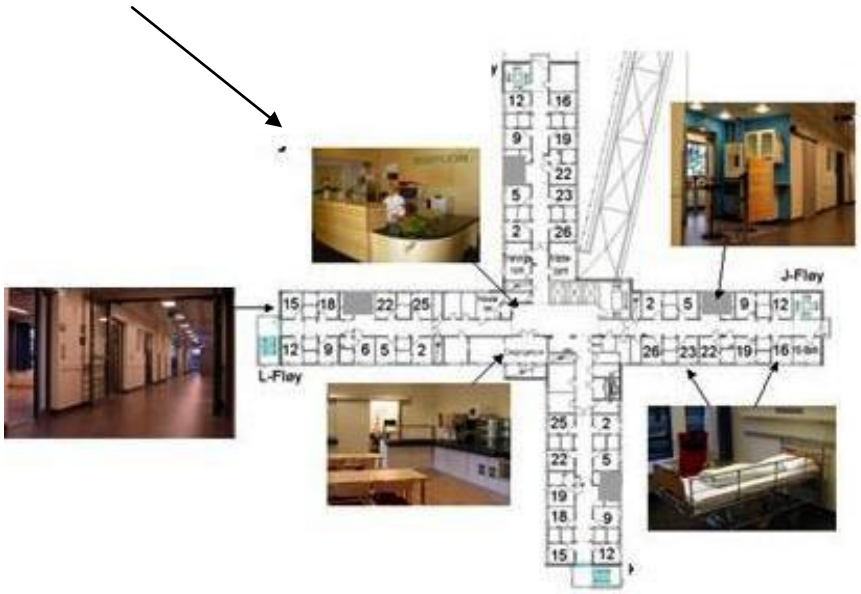

Figure 6-3: A floor in the new clinic with arrow pointing to "the middle core".

6.4.1 Opportunities for learning and knowledge creation

Horizontal interaction

The individuals in this very small group of employees are located physically far from each other, and they have no natural meeting points. The group is formally organized as their own support department, and not formally connected to the wards that they serve as receptions for (as they had been before moving to the new building). The management formally created this group during reorganization and gave them a new set of tasks, newly designed workplace, a new manager etc. At the same time, the management constructed a rotation program for these four receptionists. The suggested rotation program and perceived lack of training created a lot of frustration in the group. However, it also created a space for interaction and learning, in spite of the long distances. One of the receptionists characterizes this as a "having been through the war together" in the following quote.

Quote no. 6.4 -1

> Well, what I would have done exactly if you had asked me to take over the leadership, - that, well ... We as a group of secretaries are cooperating much better, actually, than we did before because we went through the war

> together and want a solution to this. We were in an all-out war before Christmas regarding that rotation. (receptionist J)

This process of fighting an "external" enemy (the management) has brought them closer together and as a side effect they have learned from each other and co-designed the tasks in the new position and new environment. After the initial period when they were insecure about their new job content, they still have some contact amongst themselves on work issues. The troubled situation the receptionists found themselves in after moving into the new clinic, created a strong sense of solidarity between them that had not existed previously. As we see from the quote below, the content of this contact is perceived as social more than work-content related – but this might still offer an opportunity for learning and knowledge creation beyond functioning as a support unit.

Quote no. 6.4 -2

> A: Yes, we have gotten a lot closer; we were split up more when we moved in here. Q: Were you closer before? A: Well, we talked a lot then too but were not as close as now, I feel. We support each other quite a bit because of how things have been lately, and we encourage and support each other there. We are a very small group compared to all the others. (receptionist J)

The obvious horizontal group for the receptionists is the interaction they have amongst the four of them, and they interact both formally in staff meetings and informally to discuss the organization of the unit. These do to a varying degree form opportunities for learning and knowledge creation.

Vertical interaction

In moving to identify opportunities for learning and knowledge creation vertically, it becomes apparent that the contact surface for a receptionist is quite wide and covers both medical staff, support staff, patients and relatives of the patients.

The nurses constitute the group with whom the receptionists have most frequent contact. They give them various tasks, mostly administrative chores, like photocopying etc., which are formally within the area of their positions. An already established personal relationship between the receptionists and the nurses; for instance if they have worked together before, increases the likelihood of work related contact. The nurses will then have a clearer perception of the receptionists' competence, and the knowledge overlap will be visible and sometimes high.

Further, the receptionists have contact with the patients that are well enough to move around. They are responsible for admitting the list patients when

they arrive in the morning. In addition, the already admitted patients make contact with them for the sole purpose of socializing. The location of the receptionist invites socializing, and as commented above, the personnel on the wards are few and therefore the patients will communicate with the ones they see. There are not many people in the hallway with whom to socialize. The patients often ask questions of a medical character that the receptionists are not formally qualified to answer. One example is questions on fasting. The list patients, for instance, are admitted in the morning for pre-planned treatment. The question of what they can or cannot eat and drink is then directed to the first person they meet, the receptionist. This is an example of a field in which the receptionist accumulates knowledge, and together with knowledge on the patient's diagnosis, accumulated in the same manner, she can often answer simple questions on fasting. If she cannot answer, she will find out by calling the doctor. The quote below gives a picture how the receptionists use their knowledge and learn in this interaction with the patients.

Quote no. 6.4 -3

> A: Yes, I have often been asked about fasting. Q: They are hungry? A: Not that they necessarily have to. You learn a lot about the background of the different, the different diagnoses – you know a lot about … But if you are uncertain about something and the patient wonders if he can eat something; if you are not sure based on the patient's diagnosis – whether he is having more tests – then I call the yards. Or I call the doctor. (receptionist K)

On some wards, the same patients will return to the hospital a number of times. The receptionists will become familiar with these patients and vice versa, and the patients seem to appreciate this contact. Not only does the receptionist learn and become knowledgeable on this specific case (the patient), but she also plays an important role as a caretaker for the frequent users of the hospital. There are different kinds of knowledge dimensions involved, both the medical knowledge and the knowledge about "customer" courtesy and care.

A third vertical interaction is formed with the patients' families. When the relatives come to the ward, they will often stop by the receptionist to ask for directions etc. They often asked for information on patients (what room they are in etc.). In these situations, however, the receptionists feel that they lack information and sometimes they do not even know when a patient has actually left. The electronic system is not updated between the ward and the reception. Since they lack information, they find it hard to fill the receptionist function properly.

Further identified opportunities for learning and knowledge creation in practice for the receptionists are meetings and breaks, courses, shared artefacts and special projects. Although formal training and project work appear to be the main ingredients in the strategy for knowledge management for the hospital as a whole (as accounted for in chapter 6.1), the receptionists do not participate a great deal in these vertical interactions. The receptionists perceive that they are marginalized from the internal and external training plans. One of the informants says that they have not participated in a course for five years, except for a "smiling course". The vision of a learning organization is not familiar to this receptionist, and if it creates associations, it is to formal training and courses even if they do not get involved. When asked about the vision of a 'learning organization' she is not sure what is meant by that.

Quote no. 6.4 -4

> Q: Do you feel like: yes, a learning organization – that is what we are! Is that how it is? A: No, not really. Say it one more time. Q: That Bell Hospital is a learning organization. A: No, I am not sure what they mean by that. Q: But if you think about learning, and not so much the learning in a school, rather what you learn on the job. A: I think maybe that is what is behind it, that they feel they want to give people more competence. That is what I thought it meant, but that may be wrong. Q: Well, I do not have the answer – what it denotes is what the employees feel it means. That is why it is interesting to hear what you…A: Yes, but that is most likely because they want people to get something out of their competencies; to take courses and things like that. But that does not concern me. Q: It does not concern you? A: No, that has to do with more courses. (receptionist K)

The way the receptionists are organized, they have their own staff meetings with their manager. They do not participate in any of the reports on the wards that they serve, nor the general staff meetings for the nursing staff on the wards. They feel left out, and they naturally compare this to the situation before they moved to the new clinic, when the ward secretaries always used to be a part of the general staff meetings for the nursing staff. They feel marginalized from the workplace environment, and they have tried to discuss this with their manager but feel that they have a hard time getting through to her. As the quote below shows they interpret the marginalization as having something to do with the status of the receptionists in the organization and this receptionist says that this influences her interest in her job.

Quote no. 6.4 -5

> A: I have tried to suggest it at personnel meetings, or another colleague did. Then you. .. you feel that: who are you, a secretary, to question what is happening. And then I feel that – I don't really feel that bad, I don't let myself get offended. I really notice the attitude. I won't let myself be

> stepped on, in a way, but it does something to you with regard to your job, your interest in the job, I feel. Q: Motivation? A: Yes, motivation. (receptionist K)

Even though they say that they find it hard to motivate themselves for their job, they search for new tasks and this search also becomes a search for learning opportunities. Through shared artefacts like the patient journal and the fax machine, the receptionist hooks on to different people and this will often result in new tasks.

In this chapter I have mapped the horizontal and vertical interactions which the receptionists participate in and which appear to also be opportunities for learning and knowledge creation. The horizontal interaction with peers refers to a very small and geographically dispersed group. Their interaction is enhanced by matters pertaining to becoming established in the new work setting in the new clinic and their new job description, and to their relationship to the management. Vertically they have interaction with nurses, patients, and relatives from their position at the receptionist desk. Also, but only to a low degrees, they interact vertically in meetings, in courses and in connection with technology.

The general impression is that the receptionists do not have many opportunities for learning and knowledge creation due to obstructions which will be described in the following chapter.

6.4.2 Barriers to learning and knowledge creation

Division of labour

The organizational model constructed for the receptionists has brought them together on the grounds that they are opposed to it, and this has almost paradoxically facilitated learning and knowledge creation for them in their role as receptionists. As a rule, however, they work alone and are far away from each other physically, and they have very little contact with their boss, who is way up in the hierarchy and far away from the daily routines. This organizational model and the status that this group seems to have in the organization, appears to obstruct the opportunities for learning and knowledge creation. They had, for example, not been invited to participate in the job design prior to the move, and were not included in the design of the physical workplace. The way the organization works, they feel that they have no influence on the job content, and even if they would like to suggest new procedures etc., the group does not perceive this as an option.

The content of the job has in itself diminished and they feel robbed of their tasks, since many of the tasks that the ward secretary used to have (in the old building), have been transferred to the nursing staff. This results in infrequent contact with the nursing and other staff and hence less work related contact. In order to have more to do, the receptionist takes rounds (not to be mistaken for doctoral rounds) on the wards, looking for work. Sometimes she does not meet anyone, but at other times she will meet someone and he or she will give her something to do.

The single issue that has mostly occupied the group of receptionists before, during and after moving to the new premises is *the design of the position* as a receptionist. Along with the new organizational model, a new working system based on a four-week rotation was introduced when they moved into the new clinic. The management's main argument was that in this way they could easily cover for each other in case of absenteeism etc. Based on economic arguments, their working hours were also reduced, so that no one works full time. The receptionists have resisted this rotation.

When the new plan with rotation was introduced, they became frustrated for two main reasons:
►They considered lack of ties to a specific ward and especially to a specific department manager as a great disadvantage. It threatened both their identity and their belonging.
►They felt that the management did not understand their job, and acted as if working on one floor with for instance fracture patients was equal to working on another floor with patients with cardiac failure and that this underestimated their specific medical knowledge that they would need when they interacted with medical staff, patients and families. There seems to be a matter of the management's perception of the knowledge this group holds and the role they play in the organization.

From a learning and knowledge point of view the rotation system appears to present excellent opportunities for learning and knowledge creation. It would mean doing the same job in a slightly different environment and with different people, and could contribute to a reflection on how the job was done both for the receptionists and for the different wards that she would be serving. However, this was perceived in a different way and met with massive resistance. This is also connected to building the personal relations with the nursing personnel, whom they depend upon for giving them tasks (commented upon above). The rotation system would make it harder to maintain the personal relations. The opposition to the rotation was immense, and after about nine months, still unsuccessful in implementing it, the issue was closed for good.

Also the receptionists have divergent working hours from the nursing staff. The receptionists start at 8.30, while and the nurses have already been at work since 7.00, and the receptionists miss the collective activity at the start of the day. The beginning and end of shifts represent moments for transferring information and sharing knowledge. There is no staff around when the receptionists come to work because by then they are all with their patients. This limits the opportunities for learning and knowledge creation and the following quote illustrates that by the time the receptionists start working, the rest of the staff have already finished their morning meetings and morning coffee.

Quote no. 6.4-3

> Q: The first thing you do is to get out the list? You don't talk or go into the lounge? A: No one is here when I get here in the morning; everybody is busy on the wards (yards), tending to patients and all, because they are finished with the reports a long time ago. They start at seven in the morning, one and a half hours earlier, and do reports from seven to seven-thirty. And then they are busy tending to and waking the patients when I arrive. (receptionist K)

In addition to coming in too late to interact with the nurses in the morning, they perceive that their working hours are ill timed in relation to the patients. They often experience that when they start work, patients who they are responsible for admitting, are already waiting for them when they arrive. The receptionists feel that they cannot fulfil the vision of putting the patient first, when the patients find the reception empty on arrival. They are stressed by the fact that they know that some tests should start as early as possible in the morning on these patients, but this does not happen since their working hours start at 8.30. It creates a stressful situation for both parties. The additional time schedule for treatment often depends on the results of these tests (These are medical explanations the receptionists are well aware of and often explain to patients), and the whole treatment process can be delayed because of this.

Although having already touched on the physical layout as an obstruction here I will continue by digging a bit deeper into this theme.

Physical layout

Looking at figure 6-3, the location of the receptionists in the "Middle-Core" appears to be the answer to a knowledge manager's dream. The receptionist seems to be positioned at a location where "everyone" will pass through. The patients and the staff enter the wards in this area, the doctors pass her on the way to the wards, medical staff in general pass through whenever they leave the ward, the patients pass through on their way to the cafeteria, the visitors

enter at this point, the staff pass on the way to breaks and to lunch. This study seems to give different picture, however, more of a desolated area that does not function as a rallying point. Even so, the openness and flow that were envisioned for this area, which has a name that indicates "too much of a good thing": the middle core – seem not to agree with the tasks of the receptionists.

The question of privacy and sensitivity is not only a problem when she needs to work on patient journals; they can also no longer speak about the patients and patient-related issues in the middle core. This open space is no place to speak of sensitive information, says the receptionists – it is a public space. It is also right next door to the staff lounge, with the patient dining room right across the corridor.

There is little informal contact between the receptionist and the other staff, except "in passing". The nursing staff sometimes comes in to have coffee in the lounge in the afternoon, and then the receptionist will join them. Sometimes the receptionist will make the coffee for the late shift. This used to be very different in the old building, where the receptionist was located in the middle of all the regular activity and interaction on the ward; the pre-round meetings, the post-round meetings, messages being given and received, phone calls coming in and going out etc. Through this, information and knowledge would naturally float her way, and the receptionist (at that time as a ward secretary) perceived herself to have an overview of the activity on the ward, the patients' whereabouts etcetera. Even though the receptionists have a very central location now, they feel outside the normal activity. In the old clinic, they were located in a "glass cage" in the middle of the ward, and felt as if they were on track with the rest of the nursing staff.

The architectural layout and the location of the receptionist signal "an open face" to the public, large space for flow of people and information. Still, information does not flow easily to the receptionist, neither verbally nor codified, and information from the ICT system is seldom updated. She is expected by the relatives and external (external to the ward) personnel to know for instance the location of the patients. Therefore she ironically becomes more dependent on the verbal communication, as the quote below demonstrates, than before, and this is complicated by the long distances and other barriers for learning and knowledge creation.

Quote no. 6.4 -6

> But I was thinking about departures, because earlier, I had full control over who was leaving. I got lots of free information when the doctor said this and that, but now I do not even know when a patient has already left. There are such long distances here and I cannot run to all the various yards to get

> information, and therefore, I am very much dependent on communicating with the nurses. (receptionist K)

The discussions on patient, nursing and medical discipline issues take place on the wards and this is far away from where the receptionist is located. Even though some of the nurses will come to the staff lounge, which is located right next to the receptionist, such issues cannot be discussed there for privacy reasons. The other breaks they take are usually on the ward, which means the receptionist is separated from both the discipline discussions and the social part of coffee breaks. The physical layout with an open reception area and large spacious areas, which is a fashion in large buildings like hospitals seem to form an obstacle for opportunities for learning and knowledge creation during work

The contact within the group (horizontal interaction) is on one hand complicated by the long distances, but on the other hand the contact is strong due to common war stories. Opportunities for vertical interaction are scarce due to the way the labour is divided and the way this group is marginalized in the organization. They perceive that there is a lack of understanding for the content of their job and for the specialized knowledge.

6.4.3 Summary

Few opportunities for learning and knowledge creation can be identified for this group. They have little chance for learning through interaction with each other and with others, due to division of labour and due to the physical layout. The opportunities they have also seem to be obstructed by the way the management view their role as support staff.

The greatest paradox on learning and knowledge creation for this unit is the paradox between the architecture and its appurtenant vocabulary on one hand and the actual role and tasks the receptionist have on the other. It is called ‘the middle core’, and the receptionists have a central place where all the four wards meet and where everyone enters the floor by the stairs or the elevator. The distances are physically so great that it takes too much time to walk down to the middle-core in order to delegate chores or to take a coffee break. This amounts to isolation from colleagues, and influences the division of labour. The receptionists perceive that they are located far from the actual wards, and far enough away to make it inefficient for the nurses to come and ask them to do something. It is more efficient to do it themselves.

Further the valuation of their knowledge is perceived as a problem. The receptionists see themselves as holding knowledge on “their” patient group and therefore cannot for example accept the planned rotation system. In the

former organization they had their identity tied to the ward and not to a group of receptionists, and now they are in the middle but far away from everything. Their argument is that they need to belong to a ward and to build the personal relationships with the nurses, which gives them opportunity to learn and makes them more qualified in medical matters. They also acknowledge the importance of personal relations in their attempt to (re)construct their jobs in the new building. This seems to be viewed differently by the management, however, which seems to perceive the receptionists' knowledge and competence as generic, and not directed at a specific context in the hospital or at any specific discipline. And this appears to be the most striking difference between this unit and the two previous close-to-core units under study.

In the next chapter, the ward kitchen staff is under the magnifying glass; which is another support staff unit.

6.5 The ward-kitchen staff

The kitchen service in Bell Hospital consists of a centralized kitchen, where they cook all the food for the patients, an adjoining staff restaurant and four decentralized kitchens on the wards. At the time of collecting the data for this study, the kitchen service had 12 kitchen aids, one manager and one assistant manager. Out of these, four work full time in the decentralized ward kitchens and additionally four work both in the main kitchen and the ward kitchens. These ward kitchens, which are focused on in this study, are small kitchens staffed by only one person at a time and have an appurtenant dining room for the patients. Three of these kitchens are located in the new clinic and each of these serves four wards, which means a total of 36 patients, or more if they have corridor patients. The fourth ward kitchen is located in the old building; in the maternity and gynaecology ward.

A large number of employees in the kitchens are fully trained cooks, although only a small part of the work in the central kitchen, and even more so in the ward kitchens, requires special training as cooks. Before these four ward kitchens were established, the food for the patients was taken up to the wards from the central kitchen on trays, one tray for each patient. The trays were prepared according to a card with information on the patient made out on the ward, and contained information on special diets and wishes that the patient had (how many open sandwiches for breakfast etc.). By the time this study was undertaken, they had decided to outsource the centralized kitchen, and before this study was concluded, the kitchen was actually outsourced. The model for outsourcing was not yet in place, but the intention was that they would keep the ward kitchens and buy the hot food from a kitchen at another hospital. I will return to this outsourcing project below.

The kitchen aids seem to be aware of the competitive situation that the hospital is in when it comes to recruiting patients. They consider the food to be important for increasing patient comfort and satisfaction, and believe that this will contribute to re-buy (returning of patients), and to patients recommending the hospital to others.

The ward kitchens are open 24 hours, but staffed only during the day. The nurses are allowed to enter the kitchen when it is unattended by the kitchen aids. Dinner is prepared in the central kitchen and only needs heating in the ward kitchen. Since the staffed opening hours of the ward kitchen are too long for a normal working day for one person, the additional hours are shared on a simple rotation system.

The transformation of the kitchen service to include decentralized units along with the discussion of whether to outsource the main kitchen, colours the data from the informants as we shall see in the next chapter, since these are either recent or current issues at the time of data collection.

6.5.1 Opportunities for learning and knowledge creation

The work situation for the kitchen aids is very similar to the receptionists in the new building. They work alone and they are part of the front line services. They differ from each other in that the kitchen aids are jointly organized with the central kitchen, whereas the receptionists form a group with just the four of them.

Horizontal interaction

The decentralization of the ward kitchens has made a great difference to the kitchen aids that hold these positions as far as interaction with the other kitchen aids are concerned. Other than during the overlap, when one shift ends and the next one starts, the four kitchen aids on the ward kitchens only see each other briefly in the morning and during breaks. The central kitchen staff starts work about fifteen minutes earlier than the ward kitchen staff, which means that the decentralized work group will have a few minutes to chat about "their" work after the others leave in the morning. They then go on to collect the food from the stock room and take this up to the ward kitchen on a trolley. They part and each will go to "her own kitchen". Sometimes they see each other by chance, when they have to fetch something or borrow food or equipment from each other. The overlap between shifts lasts only fifteen minutes, and these few minutes are not usually spent on asking for advice or matters concerning the daily tasks. They are spent more on general issues (weather, news etc.) or personal matters. During the shift however, the telephone is used whenever there is a

problem or a question. The questions often concern the use of ICT, or lack of ingredients and need to borrow something. Two of the cooks on the same shift schedule even share a coffee break over the internal phone.

There is little opportunity for shared face-to-face contact and cooperation on tasks. To a certain degree, they perceive that there is a need for this. As the following quote shows, they have asked for time to have meetings as a group with only those who work decentralized, but this has been denied or ignored.

Quote no. 6.5 -1

> A: We actually want that – we have asked since Christmas to have a meeting for us four ward managers. It never happens. There we could discuss things we feel are negative, what they might present to the cooks – things like that….Q: Don't you ever get together? A: No. (kitchen staff N)

There is no time or opportunity for this in the daily routine. As the following quote demonstrates, they do not have the opportunity to interact as a group.

Quote no. 6.5 -2

> We do not make use of each other either. And what I mean is that we are not allowed to sit and chat, we cannot sit down just the four of us either. Then nothing comes out of it. There are many things that perhaps one thinks of and the other thinks the same, but it can be difficult to bring up the issues alone. But if we were together, then we would actually be four people who agree on something. (kitchen staff N)

They work alone and they are cut off from contact with the other ward kitchen aids and the central kitchen staff. Most of them are trained cooks and the professional challenges are low in the ward kitchens. One of the kitchen aids expressed that it would have been nice to work partly in the central kitchen and partly in the ward kitchen, in order to keep in touch with the discipline.

From the above we have seen that the kitchen aids in the ward kitchens have few opportunities for learning and knowledge creation horizontally. In the following I will identify whether the situation with vertical interaction offers opportunities.

Vertical interaction

The kitchen aid will be in touch with most of the patients and the personnel during the day, since other occupational groups, like for instance the doctors and the managers, will sometimes come by to fetch something. The kitchen staffs on the wards have more contact with other groups in the hospital than

with their own colleagues within the same profession. The job on the ward kitchen means direct contact with the patients. The kitchen is semi self-service; the patients that are well enough to walk to the dining room will eat there. The kitchen aid stands by the counter, asks them what they would like and fills their tray accordingly. For hygienic reasons patients do not serve themselves. The nurses and health care assistants will fetch trays for the patients who need to eat in bed. This close contact with the patients is still new to the kitchen aids, since there was no such contact while they worked in the central kitchen. As one of the kitchen aids says in the quote below, this contact has changed their working day.

Quote no. 6.5 -3

> A: Yes, with the patient yes. We used to only see a name, right. It is different when you see the individuals. That is something entirely different, you know. Q: So your working day has changed very much because of that? A: Oh yes, there is no comparison. We used to be just downstairs in the kitchen, you know. We were in the cafeteria, so we had contact with the nurses. But now we see the patients – that is very different. (kitchen staff M)

The face-to-face interaction seems to have changed the kitchen staff's attitude towards the patients and it seems to have increased their understanding of the clinical picture. When working in the central kitchen it used to aggravate the kitchen staff when the patients had special wishes and needs. Now they exert themselves to please them. Their medical knowledge has increased and their vocabulary has changed, as this following quote demonstrates.

Quote no. 6.5 -4

> Q: When you say that you talk with the cancer patients, is that – that expression, is that the same you used before you started up here? A: No, there we called them 'kreft' (Norwegian for cancer) patients. 'Oh no, what does this one want now? Gosh, can't they just eat what's there!' (kitchen staff N)

They receive a lot of positive feedback on the food and the service directly from the patients. They also look after the patients in different respects, as to their diets, to fulfil their wishes and find something they like etc. Part of their tasks is to mark the patients' names off a list as they come to fetch their food. In this way, they ensure that patients eat according to their diets. If the patients do not stick to their diets, the kitchen aid will try to convince them to do so by gently setting them right. Below, one of the kitchen assistants explains how she does this.

Quote no. 6.5 -5

> A: Well, I tell them that this is not the best you can eat, since you have diabetes and everything. And then they say: Oh yes, but I am allowed – it is OK – they try to get away with it. But then I try to persuade them, and tell them that I have a delicious alternative, something better. So then it happens that they listen and put it down. Oh yes. Q: But what if they do not listen, and this happens again? Like yesterday he wanted goat's cheese again – and dessert, right? A: Then I would have taken it to the nurses, right. (kitchen staff M)

The interaction with the patients is an opportunity to acquire knowledge about their well-being and special needs. One example is the cook in the maternity ward who has been informed of the news from research on the subject of what a breast-feeding mother should and should not eat. The assistant department manager of the ward raised the issue as part of the project to regain certification as a baby friendly hospital ward. The kitchen aid communicates this to the mothers when she talks to them as they come to fetch their meals. The same kitchen aid is especially concerned with the immigrants who give birth at the hospital and what they like, dislike, or cannot eat (for instance for religious reasons). This can be very problematic, since this particular kitchen aid does not speak English, or any other foreign languages, very well. She goes through a lot of trouble trying to understand what they mean. In the quote below she reflects on the interaction with the patients as an opportunity to learn.

Quote no. 6.5 -6

> I won't say that I am learning all the time, but it is obvious that you learn a little from the patients, from the nurses; you learn to observe, you learn to read the patients' facial and body language. Or when a foreigner or the like arrives I will observe: is this the way they eat? What are they happy with? What do they like? (kitchen staff N)

She has been doing some research on her own on what immigrants like to eat, and now she is eager to learn more about foreign eating habits. That way, when the nurses come to fetch food for the patients, the kitchen aid can give advice on the different immigrant groups' likes and dislikes. In the following quote it seems that she is quite proactive in giving advise to the nurse.

Quote no. 6.5 -7

> I have observed for five months what they eat. Then a nurse comes in and says for me to have food ready. 'They eat this and that', I'll say. They usually have fine crisp bread or white bread and they'll have jam and mackerel, and stay away from cheese and such; but jam, mackerel and

> butter. This way I can help the nurses. Q: You are doing your own little investigation? A: Yes, I observe what…(kitchen staff N)

The wards and the reception area in the new clinic often seem to be deserted areas. There are large spaces and relatively few people. The patients and their relatives will often turn to the receptionist, as intended, when they first arrive on the ward. When the receptionist is not present (which happens frequently since her hours are short and she runs errands), there is however always someone in the kitchen, and patients and family turn to the kitchen aids with their questions. The kitchen has a central location on the floor and in the new clinic; it is right next to the reception. The kitchen aids are part of the front-line staff, as the kitchen aid expresses in the following quote:

Quote no. 6.5 -8

> Yes, they say so in a way. Everyone checks with me too, right, and I am there. The nurses run a lot and have no time because they are with this patient and that one. But I am always there, right. I am right behind this little counter of mine. (kitchen staff M)

Families and visitors will often be in touch with the kitchen aids. The environment is small and they come closer to the visitors and will sometimes chat. Usually they chat about neutral matters, but sometimes it is about grief and worries. Below, one of the kitchen assistants explains how she develops a relationship with families of long-term patients.

Quote no. 6.5 -9

> Yes, we are. Many are here for a long time and you get contact with them. It is a little special with regard to the cancer ward – many relatives have been coming there for months. Q: Yes, to the relatives also, of course; you connect with them, and they eat there too. A: Yes, many do. Of course, they might want to talk about something other than illnesses, right. That happens, and that is something new to get used to. (kitchen staff M)

The kitchen and dining room are located close to the reception area, and the kitchen staff and the receptionists mutually care for each other since they both work alone. The physical proximity also allows them to bump into each other. Their professions have little overlap, but they have the same colleagues and patients.

Quote no. 6.5 -10

> Q: But the one who works right in the middle area – it is not that far from where she works. A: Yes, sometimes I talk with her. We also have to pass there when we pick up the food lists, when we pick up the mail and everything. Often, the nurses stop by to get a drink, so you always see people. You are not really alone but I don't know anyone well enough yet that we talk too much except in passing. A little superficial in a way. (kitchen staff O)

The tasks are not culinary challenging; the challenges lie in other aspects of the job. The staff is responsible for the budget for the specific ward kitchen, and this means that they are organized in a matrix with the ward and the central kitchen. The manager of the central kitchen is their manager. On the other hand, their budget is part of the budget on the wards, which is the responsibility of the ward managers. This means that they are required to cooperate with both these managers. In practice, this cooperation takes different forms. While some ward managers have a very detailed cooperation with the kitchen aid, others neglect to inform them of the size of the budget that they are responsible of keeping within.

Quote no. 6.5 -11

> A: Well, X is probably...I am not sure which one of them – they most likely have some of it each, and I have asked what we are using as standard, because the cafeteria or dining room is open 24 hours. And I have talked to them and asked how things are going and if there is anything we should cut out and things like that. But, they just answer: Well you know best and you just do what you think. Q: Is that a good answer, do you think? A: It is a little difficult because you don't really know how to go about things. I don't know what my budget is; I have never been told. So you don't really know how much to order or not to order so as not to go over budget. (kitchen staff L)

I will then move on to identify opportunities for learning and knowledge creation in more formalized shapes, like meetings, projects and around use of technology.

Lunch and breaks

As we have seen from the above, the ward kitchen aids have few opportunities to meet during their daily routines. They do, however, usually meet before the shift starts and during lunch. During lunch, they join the personnel from the central kitchen and they divide into smokers and non-smokers. Smoking is only allowed outside, and well away from the site. The smokers seem to have better opportunity to discuss work issues than those who join their colleagues from the central kitchen in the staff cafeteria downstairs. This is because it is not considered acceptable to discuss work matters during lunch, and if this is done, it is not accepted that the decentralized workers discuss issues that specifically concern the ward kitchens. Some strong individuals in the group make sure these conventions are kept.

Two of the kitchen aids share coffee breaks over the phone, and when they are on the ward, they are sometimes invited in to join the nurses for coffee. The ward kitchen is located close to the staff lounge.

Meetings

When there is a meeting for the kitchen staff, the agenda mainly covers issues from the central kitchen. They do not have meetings where only the decentralized kitchen staff is present. Instead they e-mail their problems and questions to the department manager, who is the manager also for the central kitchen.

Projects

The main project affecting the kitchen aids at the time of the study are the establishment of the ward kitchens and the outsourcing of the central kitchen. The de-centralization of the food service to the ward kitchens occurred simultaneously with the move into the new clinic (three out of four ward kitchens are in the new clinic). The nursing staff and the doctors went through extensive introduction courses to learn about work and life in the new clinic, but there was no such parallel for the kitchen aids. The changes in the kitchen service have been severe, and although the decision on outsourcing has been made, it was not clear at the time of the study what model would be adopted and what main supplier of hot food chosen. In addition, the timetable for the outsourcing process was not communicated to the kitchen staff. Nor was it clear what the situation would be for the kitchen staff after outsourcing and how many of them were at risk of losing their positions etc.

The kitchen staff is not unanimously against outsourcing in principle, but they are afraid of losing their jobs. In addition, they disagree from a professional point of view. They are afraid of a decline in the quality of the food because of the transport, and that a decline in the level of service (that they cannot comply with the needs and wishes that the patients have) will hurt the reputation and the competitiveness of the hospital. The think the necessary flexibility to adjust according to patients' wishes will disappear. Like the kitchen aid says in the following quote, they also believe that the food is better when freshly made on the premises.

Quote no. 6.5 -12

> Of course the food you make there and then is the best. The way it is now, if there is anything we lack or we get patients that – well, perhaps need another diet that what we have – say we get a vegetarian for example and we do not have anything for her – then we can just go down to the kitchen or call down and find something for her then. You get a lot closer to wishes and such things. If you suddenly get an order or wish at 12 noon, and then you do not get the right food until two days later, then you cannot fulfil that wish if you cannot make something from what you have. That way it is

> much better to keep the central kitchen – because then we can satisfy the patient there and then. But if we have the food delivered… You cannot have a stock with absolutely everything, because we do not have room. (Kitchen staff L)

In addition to these large change projects that affect the ward kitchens directly, the kitchen staff is also influenced by projects that take place on the different wards. For instance, on the maternity ward during the certification as a baby friendly hospital, the middle management involved the kitchen staff in order to discuss the latest research on what maternity patients can and cannot eat. Below, one of the kitchen aids explains how they were involved.

Quote no. 6.5 -13

> A: M. informed me about that now – that they were to be upgraded as mother-baby friendly. So that was the new trend now, said M.. Q: Have they been talking to you? A: No, they have not talked to me. Q: Oh, they did not come. A: Yes, they came and just ate but did not check with me; we talked more about nursing the babies and how to assist with the nursing and things like that. But if they were wondering, M. said, there were new things taken from the (Inter)net, and it is, in fact, up to everyone to find out. Q: But that was the only thing you took part in as far as the certification? A: Yes. Q: That she informed you about it? A: Yes, we just talked a little. (Kitchen staff N)

The kitchen staff is not formally a part of the ward and since the manager does not have any obligations towards this staff, inclusion of the kitchen aids in the ward varies a lot.

Technology

Much of the communication between the ward kitchen and the ward is electronic; information is fed into the computer on the ward and the kitchen staff prints out lists on the printer in the middle core by the reception. However, there is much uncertainty about how to feed the computer the right information, and how to use correct procedures. This initiates interaction between the kitchen staff and the ward staff. The ward staff asks the kitchen staff for help, but the kitchen staff cannot help because they have not learned that part of the process. Below one of the kitchen aids describes some of the dialogue that can take place when there is a problem with the computer.

Quote no. 6.5 -14

> A: Yes, they come to me and ask all the time, even though they have instructions and things. Still, they come and ask. They may ask: 'How are

> they supposed to be entered, how do you want it? Is it correct the way we have done it? Can you check the computer and see? Are the data in?' 'Well, I don't want it this way', I'll say. 'You have to correct it.' 'But the computer won't accept it that way.' 'Well, others manage,' I'll say. 'Then ask each other for help'. (kitchen staff N)

Questions on how to use the computer for their own routines is often a reason for getting in touch with the other kitchen aids, mainly by phone. They readily help each other and share their knowledge in this field.

The kitchen aids have a broad contact surface on the ward. The formalized contact between the kitchen aid and the medical staff seem to be largely mediated through the computer. What the nurses feed into the computer constitutes the foundation for the lists that the kitchen aid prints out, and the nurses get the input from the patients. From these lists, the kitchen aid learns how many patients are on the ward, which of them will be staying for dinner and how many other family members are eating with them. However, these lists are usually not updated at the time she has to order dinners at the central kitchen downstairs. In addition, these lists are very often incorrect.

Therefore, she has to find this information in other places. On one of the wards, her main source of information is the cleaner. The cleaner cleans the rooms after the patients have left, and she gets her instructions from the nursing staff early in the morning so that she can start working right away. When the cleaner receives this information, she writes the room numbers down in her notebook. Therefore, if the kitchen staff needs to know exactly how many patients to order dinner for, she can ask the cleaner.

Quote no. 6.5 -15

> A: I take it out around 8 o'clock just to see how many patients have arrived during the night; and also in order to communicate with IL who is the cleaning lady here, or T or one of the nursing assistants, if they come by. Now they are seldom here compared to in the beginning. Then everybody wanted to see what was here and how nice it was. Q: What do you communicate with them about? A: Well, I get to know who is leaving. The midwife is supposed to sign their release. And if the patients do not get their signed release – if they have placed a lot of journals on top of each of patients that they are going to discharge, but if they have more that they have time to do, the patients won't disappear from my lists. And if they don't disappear from my list I count on them for dinner. Q: You have to talk to someone to get the rooms cleaned, right? A: Yes, they will be given the message that so and so is leaving before 12, or they are leaving by the Valley Express Bus, or around 3. Q: But when are they told that? A: They are told quite early; I think IL starts – it depends on how busy they are – today she has been very busy. So I talked to her just now as she arrived for work, and she'll start doing the patient rooms at nine-thirty. That is when

> she is told who is and who is not leaving. She notes that down in a book and I talk to her and cross off here who is leaving. Is she told by O or someone else? A: I don't know, well, she gets it verbally and writes in a book as she does not get to see the journals. She is just told that 23-2 is leaving and 25-1 and the family room… Q: By room? A: Yes, room and bed. And then I find out but do not get the bed number – I just say that one in room 25 is leaving now. And then I talk with the patient a little bit, you know, when I see that they have been here for three days, and I ask how they are doing and do they feel better. 'Are you staying a little longer?' I'll say. Or 'are you staying over the weekend?' 'No, I am leaving tomorrow'. Well, I think to myself, now I know. And when there are rounds I will talk with the one on duty at gynaecology ward and then I'll hear: Is anyone here leaving? Yes. Everyone leaves today, but we are getting a new one in. And I will say: OK. Q: But does that mean that even though you have the computer system where they are to be entered, that is not fast enough? A: No. But as long as you are alert and can get the information yourself and they don't feel that you are bothersome – I don't run around all day bothering them, only about once a day. Q: They do understand why you ask? A: Oh, yes, indeed. And I do understand, there are more important things than releasing patients. They have to be released properly and then they are removed from my list. (kitchen staff N)

In addition, the cook will ask the patients themselves. She does not ask them when they are leaving, but she small talks with them, asks them how they are doing, how they are feeling and if they are staying over the weekend etc. In the course of the conversation, they will usually tell her when they are leaving, with the result that she knows how many dinners to order for the weekend.

The formal horizontal interaction is limited within this group, and there are few opportunities to interact informally. Much of the interaction, both vertically and horizontally is triggered by technology, often the computer. They do perceive it to be a problem, however, that they have little opportunity to discuss the specific issues that concern the ward kitchens in particular, and not only food and kitchen service in general. This is part of the obstructions, which I now turn to describe in the next chapter.

Interactions with patients and visitors happen for at least two reasons, which are similar to the receptionists: the kitchen assistants are present and represent "someone to talk to". They do not move around much like the medical staff does. Furthermore, they are "safe", since they are not medical staff.

6.5.2 Barriers to learning and knowledge creation

The situation of uncertainty and the threat of downsizing enhance interaction within the group, although this communication can be destructive. They feel uninformed, though they do not blame their department manager, since they do not think she is informed either. This comes in addition to many existing problems in the central kitchen. They have had problems with the workplace environment and the quality of the food has been low. The management has tried to solve this in different ways, for example through bringing in occupational health care services, but there is still a lot of temperament and arguing going on.

One of the kitchen aids demonstrates an active interest in learning. She would for example like to improve her English in order to be able to communicate with patients that are unable to speak Norwegian. If she has a patient whom she cannot understand she will go out of her way to find someone who can help translate, as she explains in the following quote:

Quote no. 6.5 -16

> Then I will run and get someone: 'can you translate for me', and I'll ask some of the other moms: 'Is anyone here good at English – can you help me?' Q: But they probably really appreciate that you make the effort. A: Yes, because some are, you know, very particular with regard to food, right? (kitchen staff N)

The medical staff on the ward seldom dips into the kitchen staff's specialist knowledge on nutrition concerning the patient's needs. However, if they do ask for it, or even if they do not, it does happen that the kitchen staff will offer advice on diets for the patients to the nurses. In their opinion, the nurses' knowledge on diets is limited. The nurses consult them on private matters though, such as 'how to make enough gravy for a large party'. This strengthens the personal relationships.

Quote no. 6.5 -17

> A: Yes, those who use me a little more – ask about private things – how much and how am I going to set up the smorgasbord, how do I make enough gravy, how am I going to do this for that many, and things like that. Starting to collect information for a little more private use. Q: You get to know each other better that way. A: Oh yes. (kitchen staff N)

Most of the kitchen staff on the wards is able cooks, having received their formal training while employed at the hospital. They perceive that they have more to teach the nursing staff on nutrition matters than vice versa.

However, there seems to be little overlap and interaction between the nurses and the kitchen aids on issues that concern the health of the patients.

Divison of labour

Working on the ward kitchens offers fewer professional challenges for the kitchen aids than they would have had in the centralized kitchen. Still, a large part of the employees wanted these positions in the decentralized kitchens. There were several reasons; the working environment in the centralized kitchen was poor, there was the decision to outsource the centralized kitchen which made them afraid that they would lose their jobs, plus the fact that the decentralized positions would mean a higher degree of autonomy.

The kitchen aids perceive that they are autonomous in their jobs, and they very much enjoy that. Even though they do a lot of work that most of them are overqualified for, they feel that they are "their own bosses" and they have both freedom and responsibility. On the other hand this does also mean working alone most of the time and that interaction with peers seldom happens.

Since the arrangement with ward kitchens is quite new, they continuously end up in situations that are new to them; situations arise when they feel a need to discuss with their colleagues in order to find immediate solutions. One example was the first Christmas with a ward kitchen; they had no routines and procedures since this had never been done before. They did however have responsibility for keeping the budget, and this is part of the ward budget and not the general kitchen budget. In the quote below the kitchen aid explains how they perceived their work situation around Christmas. She is saying that they waited for information and a meeting to be called, but in the end they had to figure it out by themselves.

Quote no. 6.5 -18

> A: And that has been promised us, since December. We started having some problems; we thought we were being called in to a meeting – we thought this was going to happen automatically – when we realized it was not going to happen. And, we had to figure out Christmas all by ourselves, right? We had to break new ground. Q: New ground? A: Yes, we did. Geez, to stand there, and you kept getting contrary messages. If I asked about one thing that I had not been able to think of, I would get one answer, and after a while I got another one. And then we just got written notes on our trolleys – notes in our trolleys. (kitchen staff N)

The autonomous role of the kitchen aids and the way this group is organized, seem to obstruct interaction between them. This is closely connected to the physical layout of the premises, which I will describe below, simply since they are located far from each other.

Physical layout

The decentralized model with ward kitchens and a central kitchen in the basement has radically changed the kitchen service. The kitchen aids working in the ward kitchens work alone, and the distance to the other ward kitchens and to the central kitchen is great. In addition, they are expected to be present at the counter in the dining room during all meals, which takes up quite a big part of the day. Because of the distance and their immobility, they do not have frequent contact with their colleagues, neither with those on the other ward kitchens nor those in the central kitchen.

6.5.3 Summary

The tasks in the ward kitchens are mainly routine tasks, repeated on a daily basis. There are few challenges as far as cooking is concerned, and these jobs can hardly be classified as knowledge intensive positions. However, as a result of the reorganization and their new localization, they interact with a wide range of people, including the patients. They work alone and their tasks are on a wide range, but advanced expertise in cooking is seldom required. They really enjoy their freedom and their new responsibilities.

The horizontal interaction is complicated since they work so far apart. The kitchen staff has been removed physically from colleagues and superiors, and into a matrix organizational model. On the other hand, the kitchen aids' location and position on the ward and the fact that they are "always" available and seem harmless to the patients since they are not medical staff facilitate the interaction with patients and with other members of staff. Through this vertical integration they become well informed and build knowledge of the well-being of the patients.

They do not have formal access to the ward organization although they are responsible for meeting the ward's food budget. They have specialist knowledge on food, special diets and needs, and at the same time, they are closer to the core activity of the hospital and the treatment of the patient than they were when they worked in the centralized kitchen. Even though it is recognized that food is important for health, this seems to be only to a very low degree exploited by the organization. The kitchen staff seems to be only to a very low degree included in the treatment processes of the patients, although some of the patients have strict diets and others have very poor

appetite. Their knowledge does not appear to be connected to the improvement of the patient's health by the medical staff.

In sum; similar to the staff in the cardiac ward and the receptionists they have scarce interaction horizontally due to physical layout and division of labour. Vertically they have a broad contact surface with patients and peers, but like the receptionists they do not seem to be integrated in the core-activities on the wards and their knowledge do not seem to be considered useful in the core processes of healing and nursing the patients. And this becomes an obstruction to interaction necessary for learning and creating knowledge. This seems to be a difference between the close-to-core units and the support units.

6.6 Closing the analysis

In the following, the main points from the detailed presentation above are summarized. In order to ease the readability and improve the overview, this account is partially presented in matrices.

The main research question of this study is: *Where and how does learning and knowledge creation take place in different units in a hospital?* This chapter follows the lines of the sub-questions which are as follows:

i) What characterizes the strategy for knowledge management in a hospital?
ii) Where are the opportunities for learning and knowledge creation in a hospital and how do they differ between different units?
iii) In what way are the opportunities for learning and knowledge creation obstructed in the different units of a hospital?

6.6.1 Characteristics of the KM strategy in Bell hospital

Knowledge management is not an explicit part of the formal strategy in this organization beyond the objective of wanting to be a learning organization. In referring to a "strategy for knowledge management (KM-strategy)" in the following largely points to the management's understanding of Bell Hospital as a learning organization and further what actions the management has taken to facilitate learning in the organization.

The strategy is characterized by:
►An emphasis on learning activities organized as top-down activities.
►Two main activities constitute the measures taken to enhance learning: formalized training programmes and project work. The two activities are

different in their assumption on how learning takes place. While project work is based on learning in a social setting, the formalized training has focus on learning on the individual level and "where there is teaching".
►An assumption that these learning activities have a distributive effect, and hence that the learning and knowledge creation that take place during training and project work seep down in the organization
►Learning activities are separated from work practice and more specifically from the "employees' hands-on task performance".

The formalized training is in the form of *learning where there is teaching*, materialized mainly through the individual competence plans. As a rule, the projects are not initiated mainly as mechanisms for learning and knowledge creation, although some are, but learning is rather seen as a side effect. Management is partly aware of this side effect and they assume that learning and knowledge creation in projects will leak to the rest of the organization.

Learning during work and task performance does not appear to be part of the KM strategy. However, on several occasions there are references in the data material to appeals from the management to learn from each other during work: they urge the staff to participate in each other's practice, they want them to have debriefings, they want them to talk more to each other during performance of tasks etc. These appeals, however, are rarely formalized. They are verbally put across and seem to be well known to the employees, but rarely followed. This can also be seen as part of the knowledge management strategy, but does not appear as salient as the points made above and they are rarely underscored by the management.

The next chapter sums up the empirical material relevant to answer the second sub-question on where the opportunities for learning and knowledge creation in the different units are.

6.6.2 Opportunities for learning and knowledge creation

Opportunities for learning and knowledge creation were mainly analyzed along the dimensions horizontal and vertical interaction and interaction during or away from task performance. The differences between the units are additionally analyzed along the dimensions in the selection frame: old/new premises and support/core departments.

Horizontal and vertical interaction

Table 6-1 below classifies the interaction mapped in the previous analysis in this chapter for the four units under study. In the table the unit maternity/gynaecology ward is divided in two occupational groups, since

their interaction patterns differ, while in the cardiology ward the opposite is the case. There the occupational groups (nurses and health care assistants) are merged, since these two groups appear to have very similar work patterns and perceive their roles to be very similar.

As we see from table 6-1, horizontal interaction in the maternity/ gyneacology ward seldom takes place during task performance for the midwives, while this is the opposite situation for the maternity support assistants. Vertical interaction, on the other hand, takes place during task performance and "in the passing" (including lounge, lunch etc.) for both these groups. For the rest of the units, all situated in the new building with the exception of one of the ward kitchens, the horizontal interaction is often in the passing or in the break rooms, while vertical interaction to a larger degree also takes place during task performance. This table does not describe the frequency of the interaction, but as seen in the detailed description in the chapters 6.2 to 6.5 above, several of these groups seldom see each other in the passing and not even in the break rooms due to large distances and divergent schedules.

Table 6-1: Place for horizontal and vertical interaction

Occupational groups	**Horizontal interaction**	**Vertical interaction**	**Old/new building**
Midwives in the maternity/ gyneacology ward	*In the break room.* *In the passing in the hallway.*	*In the break room with subordinates, peers and middle management.* *During meetings, projects, courses, around new technology.* *During deliveries, during gynecological examination and operations.*	*Old*
Maternity support assistants in the maternity/ gyneacology ward	*In the break room.* *In the passing in the hallway. Continuously while performing tasks, with patient present.*	*In the break room with peers, midwives and middle management.* *During deliveries.*	*Old*
Nurses and health care assistants on the cardiology ward	*During report.* *In the passing in the hallway.* *Meetings (middle managers).*	*During report and rounds.* *Internal and external courses.* *Lunch and breaks.* *Projects, courses and meetings.*	*New*
Receptionists, middle core	*"War-veteran" group with peers.* *Staff meetings.*	*In the passing.* *On "rounds" looking for work (interaction with nurses).* *Interaction with patients, relatives.* *Courses, breaks and technology (fax machine).*	*New*
Kitchen *aids*	*Morning coffee, "break-on-the-phone", meetings.*	*Interaction with patients and relatives.* *Projects and technology.*	***New**/Old*

In analyzing table 6-1 above, it is equally interesting to study what is not there as much as what is actually there. What is lacking is a reference to interaction during task performance, as in for example tending to the patient together with a colleague. Table 6-2 displays this very phenomenon: How opportunity for interaction during task performance is perceived.

Table 6-2: Degree of opportunity for interaction during work

Unit studied ↓	**Opportunity for interaction during task performance**	**Opportunity for interaction during work, but apart from the hands-on task performance**
Midwives	*Low*	*High*
Maternity support assistants	*High (for part of their job)*	*High*
Nurses, cardiology ward	*Low*	*Low*
Receptionists	*Low (non existent)*	*Low*
Kitchen aids	*Low (non existent)*	*Low*

Table 6-2 gives an overview of "the degree of" opportunities for interaction and hence for learning and knowledge creation these employees perceive that they have when they work. *Opportunity* is divided in 1) opportunity for interaction during task performance and 2) opportunity for interaction at work separated from task performance. The difference between the two is understood as opportunity for interaction in carrying out their tasks and not just discussing work separate from task performance (at work but not in the middle of performing a task like for example in breaks, in the passing etc.). Once again the maternity/gynaecology ward deviates somewhat from the other groups under study in that they perceive the opportunity for interaction in general to be high. For the midwives, however, it is high in general, but low during task performance. The three remaining units in table 6-2 perceive the opportunities for interaction to be low both in general and during task performance.

Interaction during projects

In all units under study the informants mention interaction connected to change projects and other minor projects as opportunities for learning and knowledge creation, and these projects are predominantly vertically compounded. Project work is both learning activity initiated by the management, as identified in chapters 6.1 and 6.6.1, as well as perceived by the informants to be an opportunity for learning and knowledge creation. All four units under study have recently been through significant and large projects, and in all four units these projects are perceived as fields for vertical interaction and opportunities for learning and knowledge creation. Table 6-3 gives an overview of significant projects in the different units under study:

Table 6-3: Significant projects in the different units under study

Unit under study:	**Projects:**
Maternity/gynaecology ward	1. *Certification process Baby-Friendly Hospital* 2. *Balanced score card pilot project*
Cardiology ward	1. *Moving to new premises* 2. *Patient Focused Redesign*
Receptionist	1. *Moving to new premises* 2. *Patient Focused Redesign* 3. *Tasks and function radically changed*
Kitchen aids, ward kitchen	*Decentralizing food/kitchen service to wards*

Data from the informants indicate, however, that even though all groups are influenced by these projects, the degree to which they are involved varies, and there seems to be a telling difference between the core departments (maternity/gyneacology and cardiology) on one hand and the support departments on the other. The support departments do not seem to be included in project work to any significant extent, neither do they attend courses. The receptionists do not participate in the collective personnel meetings either. This is interesting in view of the findings in the previous chapter on strategy for knowledge management, where project work and training is seen by the management as an important KM-tool. This indicates therefore that there is a difference between the support departments and the core departments in terms of participation in courses and projects. This difference is a managerial difference rather that an issue on where and how they learn.

Differences between the units

The findings from these four units with different occupational groups indicate that there are no substantial differences between them along the dimension of "close to/distant from-core activity" (for detailed account, see chapter 4.2.1) as far as the opportunities they have for learning during work and task performance go. Findings show that in all units they interact horizontally in informal fields like breaks, but likewise this finding is moderated in that these opportunities are scarce, with the exception of the maternity/gynaecology ward. In all units studied there seem to be few opportunities for horizontal interaction in connection with task performance, and here I find initiatives pushed by the management to make them *less frequent*, for example the attempt to dispose of the pre-rounds on the cardiac ward and the attempt to change the routines during report on the same ward.

There is however an exception here too: the maternity support assistants. They perceive that they interact both in and out of task performance. However, the maternity support assistants' interaction during task performance refer to only one of their two main tasks; the part of their tasks related to facilitating breastfeeding, and not the part of their job that is directly related to the deliveries.

The units differ along the other dimension in the selection frame, which is the "old/new premises"-dimension (see chapter 4.2.1). The maternity/ gynaecology ward is the only unit in the sample situated in the old premises (see table 6-1). The old and the new premises have radically different physical lay-out. The members of the two non-medical support units have a mutual history of moving from environments with physical proximity to colleagues, to working alone. This is similar to the cardiac ward, where the design of the ward with single-bed-in-patient accommodation and larger distances, have separated the nurses spatially (see table 6-1). This seems to be an indication that the physical layout has an impact on the interaction pattern, on the interaction with peers in more informal settings like breaks and lunch, and during task performance due to for example single-bed rooms. Physical layout and long distances appear to obstruct the opportunities for learning and knowledge creation, and I will return to this discussion in the following chapter, chapter 6.6.3.

When it comes to vertical interaction there seems to be a congruent difference along the two dimension (close/distant to core and new/old premises). On the maternity/gynaecology ward, the only unit in the old premises, there is a lot of interaction vertically both informally in the break room *and* during task performance (during deliveries). In the three remaining units in the new premises however, most of the interaction is detached from task performance and for the two support units this interaction is mostly with patients and families.

The research question was on opportunities for learning and knowledge creation, and the main empirical finding is lack of opportunities due to lack of interaction during task performance, and more specifically lack of horizontal interaction during task performance.
In the light of this overview and main empirical finding it is natural to investigate what obstructs the interaction? The next chapter focuses on identifying the obstructions of opportunities for learning and knowledge creation.

6.6.3 Barriers to learning and knowledge creation

In all four units under study there are two factors that emerge as obstructions to the opportunities for learning and knowledge creation. These have been identified in the detailed description earlier in this chapter as 1) physical layout and 2) division of labour.

Table 6-4 illustrates that the physical layout seems to play a role for interaction both vertically and horizontally. This does, however, not seem to be the case in the maternity/gynaecology ward (which is therefore left out of table 6-4), and this may have to do with the fact that they are located in the old building (see figure 6-1 in chapter 6.2), and partly due to the nature of the work.

Table 6-4: Obstructions due to physical layout

	Opportunities	**Physical obstructions**
Nurses cardiology ward **NEW BUILDING**	*"In passing" in the hallway, report, internal courses*	*Small wards=small staff on a large area, long distances,* *on single-bed-in-patient accommodation, staff lounge located close to public area*
Receptionists, middle core **NEW BUILDING**	*"War-veteran" group with peers*	*Location: Middle-core which is "desert" area,* *lack of formal meeting place*
Kitchen *aids* **NEW (3), OLD (1)**	*Morning coffee, "break-on-the-phone"*	*Location: Work by themselves on different floors,* *lack of formal meeting place*

The architectural layout of the new wards, the decentralization of the kitchen aids and the localization of the receptionists all support the idea of the well-being of the patient. Table 6-5 shows a selection of *examples* of how the consideration for the patient influences the physical layout of the units under study.

Table 6-5: Implementation of "patient first"

Unit Studied	***Example* of how the objective of "Patient First" influences the physical layout of the units**
Cardiology Ward	*Single-bed-in-patient accommodation*
Kitchen	*Kitchen-on-the-ward*
Reception	*Located on each floor to serve patients and families*
Maternity/ Gynaecology Ward	• *The patients are moved around during their stay from multi-bed rooms to single-bed rooms in order to fulfill their wish for single-bed rooms.* • *Family and fathers "live-in".*

The consideration for the patient is also in focus on the maternity ward, exemplified by how the staff aims to satisfy the patients' wishes for single-bed rooms and family rooms, which are scarce on this ward. Even though putting the patient first is an obvious objective for a hospital, the focus on learning and knowledge on the one hand and the consideration for the patient on the other seems to pull in different directions.

Division of labour seems to constitute another barrier for workplace interaction. However, the influence of the physical layout and the division of labour are difficult to separate, since they seem to mutually amplify one another's influence on opportunities for the degree of interaction. Table 6-6 illustrates the connection between division of labour and opportunity for interaction, and as we see from the table, the connection between the two: physical layout and division of labour, is illustrated here.

Table 6-6: Division of labour as barrier for workplace interaction

Unit under study ▼	**Opportunity lacking <u>horizontally</u> due to division of labour**	**Opportunity lacking <u>vertically</u> due to division of labour:**
Maternity ward	*Delivery rooms do not function as shared opportunity for learning and knowledge creation.*	1. *Middle managers' increasing amount of administrative tasks* 2. *Doctors and midwives have separate spaces to discuss patients before mutual meetings and rounds*
Cardiology ward	*Single-bed-in-patient accommodation, new clinic and process based work routines*	*Middle managers' increasing amount of administrative tasks*
Receptionists	*Work alone and lack formalized space for interaction with peers*	*New manager far removed and tasks scarce*
Kitchen aids	*Semi-decentralized kitchen. Work alone and lack formalized space for interaction with peers*	*Very low degree of integration with the staff on the wards*

The physical layout seems to form barriers to interaction for the non-medical support staff and few opportunities arise. On the wards, the nurses are additionally divided by the organization of the tasks.

The data material includes examples from all units of opportunities for learning and knowledge creation that have either ceased to exist, or that are hindered or resisted for some reasons, as table 6-7 displays. The table shows how the employees in the different units react and what measures they themselves suggest.

Table 6-7: Interaction refused or obstructed

GROUP	SITUATION	REACTION/ SUGGESTION
Midwives	*Midwives perceive that the doctors have already discussed patients with each other before meeting up with the midwives. They find meetings unnecessary*	*Withdrawal – would like the doctors to attend the report instead*
Maternity support assistants	*Not accepted that they suggest measures and action (to the midwife) during delivery*	*Discuss this with middle management. Try to make their knowledge visible in informal discussions during breaks*
Nurses and assistant nurses – cardiology ward	*Rounds, pre-round meeting taken out of the structure by the management, but forced back by the doctors*	*Withdrawal - find the pre-round meetings waste of time, which results in less reflection on patient and less contact with the doctor. Doctors "recommended" to have pre-round meetings with other doctors*
Receptionists	*Workload uncertainty, identity questioned and "belonging" lacking*	*Pro-active in marketing their services* *Suggest improvements in meetings, join forces, apply for positions elsewhere*
Kitchen aids	*Decision on outsourcing of central kitchen progresses slowly. Uncertainty about future*	*Ward kitchen positions very popular – despite few discipline challenges*

As we see from table 6-7, various issues, for instance identity, power issues and issues on professional antagonism, form additional barriers to opportunities for learning and knowledge creation. On the cardiology ward the relationship between the carer (the nurse or the nurse's aid) seems to be "privatized" as a result of a combination of the physical design and the division of labour. The recurrent interaction which previously took place "unconsciously" since they constantly bumped into each other or found themselves to be in each other's proximity in the old building, is now something they must remind each other to do and be very conscious about not forgetting. And still, they do not find that they succeed.

A feature of the organization of tasks is the degree of autonomy the division of labour 'grants' the employees. In all four units studied, autonomy in

various forms is salient, and seems to have an impact on opportunities for learning and knowledge creation. Physical layout and division of tasks both seem to increase the autonomy for the individuals in most of the units under study. This also emphasizes a focus on the individual, as opposed to a collective focus, in the organization.

In general it seems that they have a low degree of interaction and cooperation while performing their tasks, and this result in few opportunities for learning and knowledge creation in practice. Even though they have substantial freedom in carrying out their tasks, though they have to organize their tasks around some vertical relationships and dependencies like doctor's rounds, mealtimes, and contact with domestic specialists and routines, the interaction rarely seem to involve peers. This freedom in carrying out their tasks, or autonomy, literally separates the employees from each other in their daily work. This is what is illustrated for the units under study in table 6-8, through a description of the relation between the worker and the task in terms of autonomy.

The occupational groups under study seem to have a high degree of autonomy for different reasons: historical and professional reasons (midwives), or as a result of physical layout and division of labour.

Collaboration is low due to efficiency demands and several of the fields for interaction have been removed or reduced. The degree of collaboration is low, and consequently verbal communication is reduced. Transfer and diffusion of knowledge and information increasingly consists of handing over written material. One example is during report on the cardiology ward, where the demand for more transfer in the form of written reports is substantiated by safety and efficiency demands.

Table 6.8: Description of relation between worker and task in terms of autonomy

Unit studied ▼	**Description of relation between worker and task**
Midwives delivery	*Have traditionally had high autonomy. This history seems to obstruct opportunities for learning and knowledge creation – especially vertically – between midwife and maternity support assistant.*
Maternity support assistants	*Although lowest in the hierarchy of the healthcare workers, they have their own discipline – breastfeeding. They therefore have high autonomy when working with breastfeeding, but low when cooperating with the midwives*
Nurses cardiology ward	*High autonomy due to new ward design with single-bed rooms and due to patient focused redesign, but also a wide range of tasks, from advanced nursing (like administering medicines) to helping the patients with their personal hygiene and fetching their meals. "Privatization" of relation between nurse and patient – and between nurse and other occupations (doctors, physiotherapist etc.).*
Receptionists	*They are in a situation where they have lost most of their tasks, and have problems performing the ones they have due to physical layout. They have high autonomy, but lack tasks (in general), sense of belonging and responsibility.*
Kitchen aids	*High autonomy since them each has their "own" kitchen on the ward. This also means that they have a wide range of tasks from some slightly advanced cooking, to cleaning and heating pre-made food, but low autonomy within their occupational field: cooking*

With this, I conclude the analysis chapter. I have included rich descriptions of the case and its subunits, and in this last subchapter I have attempted to single out the elements that emerge as the most conspicuous for discussing where and how knowledge is shared and created in this organization.

7 Discussion and contributions

The aim of this chapter is to discuss the conclusions from the analysis in chapter six, and elaborate on their connections to theory. The chapter ends with an overview of the contributions of the study, and is followed by issues for further research in chapter eight, which is seen as part of the contribution in this study.

The main research question in this study has been: *Where and how does learning and knowledge creation take place in different units in a hospital?* In the previous chapter, the data material was analyzed with reference to three sub-research questions that relate to the overall research questions each in its own right. These sub-questions were:

i) What characterizes the strategy for knowledge management in a hospital?
ii) Where are the opportunities for learning and knowledge creation in a hospital and how do they differ between different units?
iii) In what way are the opportunities for learning and knowledge creation obstructed in the different units of a hospital?

This chapter will largely follow the structure of these sub-questions. However, the question of the 'differences between the units', which is a part of both sub-questions ii) and iii), are discussed *both* as part of the sub-questions, as well as in its own section, chapter 7.4. The reason is that there are some differences that seem to cut across the categories lined up in subchapters 7.2. and 7.3, and by discussing this issue from several angels I try to paint a fuller picture of differences between the units on both the issue of opportunities and of barriers to learning and knowledge creation.

Empirical findings in this study have amplified the thematic inter-connectedness between the research questions. The interconnections circle around "Bell Hospital as a learning organization". The strategy for knowledge management can largely be characterized as top-down with an educational perspective (Doornbos et al., 2004). Learning is separated from task performance as in 'learning where there is teaching' in formal training settings and through project work. Further we have seen that the units under study have opportunities for interaction and hence for learning and knowledge creation, both horizontally and vertically, but where both horizontal and vertical opportunities seem to be obstructed by barriers like division of labour and the physical layout of the hospital. These empirical findings will be the point of departure for the following discussion.

7.1 Characteristics of the strategy for knowledge management

In the process of studying where and how learning and knowledge creation takes place, the first step has been to map the strategy for knowledge management in Bell Hospital, meaning the way it is expressed by some of the managers and representatives of the ICT and training department. The purpose of this mapping has been to give a backcloth for the identification and analysis of the opportunities for learning and knowledge creation. A further purpose has been to identify how the management in Bell Hospital operationalizes the vision of a learning organization. Bell Hospital has proclaimed itself as a learning organization, and as we have seen from the above analysis, this has been operationalized more or less as the sum of training programmes, drawn up in the individual competence plans, and management initiated project groups (see chapter 6.6.1). These initiatives are characterized by:

1. An emphasis on learning activities organized as top-down activities.
2. The two main activities are formal training and project work.
3. Learning activities are separated from work practice and more specifically from the "employees' hands-on task performance".

There is an assumption that these learning activities have a distributive effect on knowledge, and hence that the learning and knowledge creation that take place during training and project work seep down in the organization. Further these two activities are dissimilar in their assumption on how learning takes place. While project work is based on learning in a social setting, the formalized training has focus on learning at the individual level and "where there is teaching".

In referring to point two in the list above, most of the initiatives for learning through formal training, such as courses of various kinds, are spelled out in the individual competence plans and this training often awards formal qualifications and a raise in salary. These formal qualifications are used as a way to measure learning in the organization and to measure the increase of the competence level in the working staff. The character of these activities coincides with the employees' perception of learning; they often equate learning with formal training or learning 'where there is teaching'. This indicates a focus on individual learning processes separated from practice, referring to point three in the list above. Learning and knowledge creation is separated from the work situation and the cognitive individual learning process dominates the strategy. There also appears to be little consideration of learning activities outside the "educational perspective" (Doornbos et al., 2004). The underlying assumption that the management has on learning and

knowledge seems to be that knowledge can be transferred in a codified form, which indicates that knowledge is viewed as a resource that can be passed on, rather than viewing knowledge as a process (Newell et al., 2002). This method of knowledge diffusion agrees with the view of knowledge as precise and evidence based as in the field of medicine, but fails to acknowledge the importance of the practice, and sometimes tacit, dimension of knowledge. This is what Cook and Brown (Cook & Brown, 1999) label "the epistemology of possession" which refers to privileging explicit and individual knowledge over tacit and collective knowing.

When a problem needs solving, or if new technology or new work methods are introduced, the management appoints a project group with a specific mandate. Working in projects emphasizes the collective dimension and thereby the interaction and collective reflection in a group, as opposed to individual reflection. The ICT and training department views project work as contributing to building organizational culture in general, and more specifically building "a culture for learning". This is in spite of the fact that project work in this organization often fails its main purpose. The stickiness of knowledge is not problematized. Stickiness is usually seen as a problem in sharing knowledge and copying best practice, in particular *within* organizations (Brown & Duguid, 2001). Although collaboration takes place in project groups and creates a place for learning and collective reflection, knowledge tends to remain within the borders of the project group and appears to be difficult to diffuse to the rest of the organization. When learning is taken out of context, the knowledge sticks to the persons that hold it (Brown & Duguid, 2000) and the experiences that build this knowledge are often not further built on.

Nonaka (1994) illustrates an organizational model with project work as one of the main modules: the hypertext organization. The model is a mix of a traditional hierarchical organization (which Nonaka calls *the business system layer*) and a project based organization (in Nonaka's words, *the project business layer*), where individuals wander in and out of projects as knowledge activists (von Krogh et al., 2000). The employees learn and create knowledge in projects and transfer knowledge to and from projects, and to and from the basis organization, in a dynamic knowledge cycle (Nonaka, 1994). Research on project based learning demonstrates however, how difficult it is to transfer knowledge created and shared in projects to the rest of the organizations (Scarbrough et al., 2004a; Scarbrough et al., 2004b). Projects do offer an opportunity to learn, among other factors, trough collocation (Scarbrough et al., 2004b). Project members are not collocated as a rule, of course, but in Bell Hospital, that is the case.

Few projects can actually be carried out during regular task performance, with the exception of projects used for the purpose of learning about new technology or tools. Therefore, most projects will also be a learning arena apart from the actual task performance. When learning and knowledge creation take place within the project, a learning boundary is created between the project as a field of learning and the rest of the organization. The effect of the boundary is that it "reinforces the division between project practices and practices elsewhere in the organization, thereby limiting the transfer of learning from the project to the rest of the organization" (Scarbrough et al., 2004b:1583). This means that the knowledge and learning that takes place within the project can actually appear as a barrier to learning across the border from the project to the rest of the organization. Therefore, even if the projects offer an opportunity for learning and knowledge creation, the rub off effect anticipated by the management will not necessarily be fulfilled.

An example project work is the Balanced Score Card (BSC) project in Bell Hospital (for details see chapter 6.2.1). As we see from this project, great effort is put into defining the indicators for measuring the activity, and attention is therefore turned to the indicators that can be operationalized as such (Nonaka, von Krogh, & Voelpel, 2006), and in addition, a whole new vocabulary is introduced which contributes to building barriers. This is also the case for several of the other projects. In some ways these projects do resemble communities of practice: they are institutionalized, which CoPs can be (Wenger et al., 2002), but they do not necessarily have shared understanding since the project group is compounded by the management. A project group in action is also a Ba (Nonaka 1994), and represents and opportunity for learning and knowledge creation, however, it is not a Ba for socializing through seeing each other in action – nor for reflection-in-action (Schön, 1983).

The projects in Bell Hospital have a tendency to fail their prime purpose or fail to reach their specific goal. They terminate prematurely for different reasons, or the results and suggestions fail to be implemented due to lack of funding. Even so, these projects are opportunities for learning and knowledge creation and in these projects the members reflect on how they work. They are however separated from the regular task performance, and the nature of the projects, for instance Patient Focused Redesign and the Balanced Score Card, have an emphasis on codified knowledge.

The use of courses, individual competence plans and projects as main ingredients in the strategy for knowledge management demonstrate the dominant view of knowledge, which tends to emphasize explicit, codified and theoretical knowledge. This is a view on knowledge that makes

knowledge seems manageable in the sense that it is transferable between individuals and units independent of time and place. Hence, the strategy for knowledge management in Bell Hospital is mainly a codification strategy (Hansen et al., 1999). A codification strategy means that knowledge is classified and fed into databases, handbooks, procedure-books etc., which makes it possible to be retrieved in another place, at another time and by other people. Knowledge and holders of knowledge are separated, and knowledge is to a larger degree standardized and context specific nuances can be lost. In the data material this is a recurrent feature:

►specific to this organization (Bell hospital)
►specific to the discipline (health)
►specific to the industry or field (health care) and to the governance of the health care field nationally.

These connections are discussed in the following:

Specific to this organization, the individual competence plans seem not to embrace learning during work, and hence seing each other in action. Internal and external courses are perceived as the dominant contributions to learning in the organization, both by the informants and the management. Courses can be defined as opportunities for learning and knowledge creation, since they offer an opportunity for interaction with peers that are external to the organization, and can be a place for collective reflection on action. These opportunities are however removed from the work context.

Within the discipline of health care, the status of theoretical knowledge is high. This is partly connected to the nature of the enterprise, where evidence based medicine, or "scientific" knowledge, has a strong position, at least formally (Malterud, 2001). This constitutes an inherent paradox in an organization where work based knowledge has traditionally played a dominant role and learning has taken place in the relationship between master and apprentice (Heggen, 1995) and developed through "show and tell" (Styhre et al., 2006). As we see here, learning is mostly seen in a rational frame, as an activity separated from practice, like internal and external training (Lampel & Bhalla, 2004). This means that the measures taken in the strategy for knowledge management fit the view of knowledge and learning within the discipline. This is confirmed by the review on research within the field in chapter 3.3.2.

With regard to the "industry" of health care and governance of the health care field, New Public Management (NPM) seems to have had an impact on the way strategy for knowledge management is carved out. The customization feature of NPM (as discussed in chapter 2.1), on one hand, and the vision of becoming a learning organization on the other, seem to

form a paradox. This is largely due to the ideological underpinnings of New Public Management which emphasize efficiency and customer satisfaction which is measured in the relatively short term, whereas learning and knowledge creation has a long term perspective and demand organizational slack as a facilitator for learning (Takeuchi, 1998; von Krogh et al., 2000). The influence of New Public Management (NPM), underpinned by liberal ideology and measurement eagerness, is obvious in Bell Hospital. During the last health care reform in Norway, the hospital was converted to a *Health Enterprise;* they have outsourced part of their units and they have introduced Balanced Score Card and Business Process Reengineering. Both the economic features and the managerial features (Klausen, 2005) of NPM is effectuated. New Public Management has a central element of customization (Klausen, 2005), and customer satisfaction is eagerly measured in Bell Hospital. The results of these measurements show that both the employees and the patients (the customers) are pleased and the ratings are good. This is however not a measurement of learning and knowledge creation, and this might give an indication that although "everyone" is pleased, this could be a good result in the short run, while omitting to consider possible side effects and effects in the longer run (Christensen, Lægreid, Roness, & Røvik, 2004).

The changes made in the process of reengineering and building of the new clinic are in line with the efficiency demand of NPM, but can be seen as contrary to facilitation of learning and knowledge creation. Emphasis on the individual as the learning unit, for instance, is in line with the demand for efficiency. Collaboration takes time and is not seen as efficient in the short run.

7.1.1 Characteristics of strategy for knowledge management – findings

The strategy for knowledge management is characterized by:
►Codified knowledge as the dominating knowledge view
►Individual level as the dominating learning level
►Educational perspective on the measures taken as part of the strategy; exemplified by internal and external training and project work. This means that learning is seen as an activity separate from the work situation.

As mentioned introductorily, the mapping of the strategy for knowledge management is done with the purpose of painting a backdrop for the two next research questions. This has been a presentation of the strategy for knowledge management as managers and the department of ICT and training have described it. I now turn to discuss the empirical findings on where the opportunities for learning and knowledge creation are in this organization. This is turning to the strategy or theory "in use" (Schön, 1983), whereas the strategy for knowledge management discussed above is the espoused

strategy. In the following I will discuss the empirical findings on where the opportunities for learning and knowledge creation are, with a specific focus on opportunities where work is carried out.

7.2 Opportunities for learning and knowledge creation

In this study, interaction is seen as a prerequisite for learning and knowledge creation. When peers see each other in action, an opportunity for learning and knowledge creation has emerged. The empirical findings indicate that of the units studied, informants in the three units in the new building (plus the kitchen unit in the old building), do not perceive the degree of opportunities for interaction to be high, neither horizontally (between peers) nor vertically (between different occupational groups).

Opportunities for learning and knowledge creation emerge in meetings, during organized external and internal training, during report and rounds, and through participation in small improvement projects and in larger change projects.

The physical layout and the division of labour appear as salient factors that influence opportunities for interaction. Empirically these two factors are interwoven and hard to separate. Additionally it is hard to establish a direction for the causal relationship between the two – they influence each other and they can either facilitate or work as barriers to learning and knowledge creation. In the following I will attempt to separate them analytically. In tables 6-1 and 6-4 in chapter 6.6, a difference between the units situated in the old and the new building is visualized. This difference draws attention to the physical layout as a factor that influences the opportunities for learning and knowledge creation and this will be discussed in more detail in the following.

7.2.1 A place for learning and knowledge creation

In the search for where learning and knowledge creation take place in the empirical part of the study, I searched for "the point of tangency": Where are the places where employees are tangent to each other, where they can see each other in action and where an opportunity for learning and knowledge creation opens up? As pointed out in the previous chapter these instances occurred in all units under study and it was perceived that learning took place, for example when the cooks consulted each other about the Christmas preparations, when the midwives consulted the maternity care assistants about how the other midwives performed tasks etc. What the data material showed most was the *lack of place*, and this has been treated as obstructions

to learning and knowledge creation and will be discussed below in chapter 7.3. In this chapter the places mapped in chapter six will be discussed with relevance to theory and an aim is to categorize these places.

There seems to be a difference when it comes to *place* between the new and the old premises. The old and the new buildings are different in many respects. The sheer size of the premises seems to play a role, as well as the organization of it. Additionally, the size and the organization are excessively intertwined since the old and the new premises are different both in layout (see figure 6-1 and figure 6-2) and in extension. In the new clinic, several places designated for interaction or designed for "contactivity" (Earl, 2001), do not seem to function according to their purpose like the launch, the middle core etc. These places are designed as places for contactivity, defined by Earl as "meetings that create contact and activity" (2001:226). As a contrast, on the maternity/gynaecology ward the place (staff office) is not particularly designed for learning, but still has that function since this is a place where people bump into each other. This is one of the characteristics that set the maternity/gynaecology ward apart from the other units. The other characteristic is slack, which is due to the uneven work pressure caused by irregularities of births (differences are further discussed in chapter 7.4).

Internal and external courses form spaces for interaction, which means that the teaching is not the only source of learning in such a context. The informants say that the courses offer an opportunity to meet colleagues from their own and other organizations. Through interaction with them in breaks etc., they share knowledge and learn about conditions elsewhere. That gives them a chance to benchmark certain aspects of their own institution. The organized and formalized teaching spaces have multiple purposes and offer a shared space, but learning and knowledge creation in connection with internal and external courses is learning removed from practice and lacks the immediacy to practical situations. It is a Ba for combination (Nonaka, 1994). It can be a place for reflection on action both collectively and individually (Schön, 1983), but not for learning and collective reflection *in* action.

Technological devices represent a place for interaction and an opportunity for learning and knowledge creation, where the learning and knowledge creation is not necessarily is connected only to learning the technology itself, but learning is multidimensional. There is "learning to use the technology", for example on the maternity/gynaecology ward when several occupational groups learn to use a new surveillance machine. Additionally there is an opportunity for learning and knowledge creation as the machine is in use when there is a need to discuss and reflect on the results that it produces. And finally, technological devices like for example the telefax machine in the middle core, is a meeting place, a place for interaction where reflection

can take place. Data shows that shared artefacts, such as new technology are boundary objects (Carlile, 2002). Boundary objects are various "reifications around which communities of practice can organize their interconnections" (Wenger 1998:105). These boundary objects can create opportunities for interaction that can be precursors for collective reflection, learning and knowledge creation. One of the features of these technological objects is that they can turn a traditional master-apprentice relation upside-down, as the apprentice "suddenly" becomes the master.

In conclusion to the above discussion it appears that physical layout and physical proximity as a consequence, play a role in how learning and knowledge creation take place in the organization under study. Where there is physical proximity, the level of interaction seems to be higher than where there is lack of physical proximity. The long distances inhibit the use of the places designed for contactivity, and thereby have a direct influence on the opportunities for interaction during work. The physical layout also influences the way the employees work. Long distances and single-bed-in-patient accommodation result in less cooperation and higher degree of task autonomy, which I will return to discuss in the chapter on barriers. In the frameworks discussed in the theory chapter 3, little attention has been paid to the place of contactivity (Earl, 2001).

Some of the places for interaction as opportunities for learning and knowledge creation reviewed above, have features of being what Earl labels places of contactivity (Earl, 2001). These are for instance the staff office in the maternity/gynaecology ward lounge in the same ward. It can be seen as complementary to "portable places" for interaction (Østerlund & Carlile, 2005) (see chapter 3.1.2). Portable places are also physical or they have some physical artefact that initiates interaction, but they are "outcomes of practice" and emerge during the activities that take place. In the next chapter I move to discuss interaction during task performance, where the situation of performing the task together is a portable place and a potential opportunity for learning and knowledge creation.

7.2.2 Interaction during task performance

Members of occupational groups in this study are bearers of practical knowledge and hands on craftsmanship (for example nurses, nurses' aids, cooks and midwives). Traditionally, the craft has been passed on in master-apprentice situations and relations. Presently, the situations where peers

work together in practical, hands on situations seem to be rare. The actual task performance seldom seems to be the learning field except in the regular apprenticeship programme.[11] The master-apprentice situations are obvious opportunities for learning and knowledge creation, even in instances where the relation is neither intended nor formalized.

Horizontal communities

Horizontal interaction is left to live its own life in the units under study in the sense that this does not appear to be emphasized in how work is organized. Horizontal interaction during task performance appears to be sacrificed for the sake of efficient task performance, for example the relation between the nurse and the patient is "privatized" in the cardiac ward, the midwives' omission to participate in each other's deliveries.

Horizontal interaction has different features than vertical interaction. In the horizontal interaction with peers the degree of redundancy or overlapping knowledge (Nonaka, 1994), will be high, peers will see each other in action and will be able to show each other how they work while they simultaneously reflect, individually and collectively (Duguid, 2006), and when interaction happens during task performance, peers see each other in action even without being for example motivated by the need to solve a problem. The CoP framework has its emphasis on the horizontal relations, but problematizes to a very low degree the scarceness of the interaction between peers as seen in this case. Nonaka emphasizes the role of the middle managers to facilitate for ba and does mention the cost of such organizing with what they label as "the right mix of people" (Nonaka et al., 2000), but as discussed in chapter 3, the interaction during or close to task performance is often unintentional and Nonaka et al.'s picture of the manager as omnipresent and reading the situation is foreign in the hospital under study, where middle managers are increasingly distant to hands-on work situations.

On the wards, most of the reflection on practice takes place away from the "doing"; during lunch and breaks, outside the delivery room, in the hallway, in the lounge etc. It takes place within the confines of the ward or the department, but not where the actual work takes place and where the patients are. Horizontally, the opportunities for interaction seem to emerge in connection with task performance for only one of the occupational groups

[11] The hospital has regular apprenticeship programmes for novices in the various occupational groups and for new employees. These programmes are not under study here.

under study; the maternity care assistants. As we see from table 6.3., all groups under study have low opportunity for collective reflection during task performance, with the exception of these maternity support assistants. They seem to contact each other and have very many similarities with the description of a community of practice described by Wenger (Wenger, 1998). They discuss treatment methods with each other, in the presence of and with the patients. They seem to collectively reflect on practice with their peers during supervision of breastfeeding. However, in the delivery room with the midwife and the patient, which is a vertical community, this seldom happens. Here the maternity care assistants are potential knowledge activists (von Krogh et al., 2000), but are not permitted to speak during deliveries, unless asked.

One example of a formally initiated community is the meetings that the middle managers have. These meetings resemble a community of practice, since CoPs are essentially informal and "produced by its members through mutual engagement" (Wenger 1998:118). That is; these meetings are conducted in an informal manner and without an agenda, but are formal in that they are institutionalized as an activity with a set time and day, and removed from task performance to a predestined site. These meetings were institutionalized by the members themselves as a bottom-up initiative, and only middle managers on the wards automatically become members. This is an institutionalized meeting space, and as an organizational learning mechanism it is integrated since these managers reflect collectively on the tasks that they actually perform themselves (Lipshitz et al., 2002). This example shows that the middle managers have initiated a closer interaction horizontally. Vertically, as mentioned above, the picture is different since the middle managers have become increasingly distant to the hands-on activity. The middle manager is seldom present in the practice-space, and has almost solely administrative tasks. Their tasks are solved at the desk and not with the patient, which is an example of fragmentation of practice. A fragmented practice is a way to describe how each employee has her day outlined due to the needs of the patient (or customer), and other persons and institutions external to the ward, while there are few occasions that call for horizontal interaction. One example here is how the nurses in the cardiac ward "never" have lunch together anymore, since their day is organized around the patients, their appointments for treatment etc.

Findings from this study indicate that collective reflection takes place *on* action, but seldom *in* action, where they can show their peers: Look! (Duguid, 2006). I will argue that this seemingly minor difference between reflections *in* and *out of* practice is of importance, since the practical and the tacit dimensions of knowledge are visualized and developed in the practical performance of the tasks, where a person actually sees how and what another

person does (Brown & Duguid, 1991b; Nonaka, 1994). Practice that is reflected on *out of practice*, cannot substitute the simultaneous situation of learning and doing. In this organization where there is a lot of practical and manual work and where employees are part of a field that traditionally has had a high awareness of tacit knowledge (Heggen, 1997), *learning from each other while doing* seems to lose territory. This will be discussed in detail in chapter 7.3.

Vertical communities

Horizontal interaction takes place "in the passing" and seldom directly in connection with task performance (see table 6-1). Vertical interaction also takes place in the passing, but additionally the occupational groups interact vertically during task performance in repetitive patterns, such as during deliveries (for instance midwife and maternity care assistant). Compared to horizontal interaction, vertical interaction appears to be more formalized and the vertical interaction or *vertical communities* are part of the division of labour where employees are involved with each other and interact out of necessity of performing a task. The "vertical communities", a concept introduced here to label the interaction that takes place across occupational groups, across departmental boundaries, up and down the hierarchy and sometimes with patients and families, seem to be to a larger degree inherent in the work practices and part of the task performance and therefore more frequent by necessity, so to speak.

The project work is a vertical community, and these top down initiated communities seem to facilitate and enhance reflection on practice. However, this interaction is also frequently obstructed for a number of reasons and therefore does not turn into an opportunity for learning and knowledge creation.

7.2.3 Opportunities for learning and knowledge creation - findings

The second sub-research question posed a question on the opportunities for learning and knowledge creation.

There seems to be a difference between the units under study when it comes to opportunities for learning and knowledge creation along the dimension of old/new premises. The new building offers less physical proximity due to the physical layout and long distances, and the places designed for contact and interaction in the new building do not function according to their purpose. This seems to be due to the weak link between the place for contactivity and the task performance itself. This supports findings from a study by Tagliaventi and Mattarelli (2006) where they found that institutionally

planned opportunities for knowledge exchange were insufficient and that operational proximity was a necessary condition for knowledge exchange.

Horizontally, opportunities for learning and knowledge creation in connection with work were found to be scarce. In light of the difference in horizontal and vertical places for interaction and hence for learning and knowledge creation, the data on horizontal interaction are fit to question the assumptions in the community of practice framework, both the assumption that CoPs emerge practice, and as an implication for management when CoPs are used as a KM tool. The vertical interactions, or communities as labelled here, emerge partly as a result of task performance and also more frequently during task performance. However, while the horizontal communities are obstructed by division of labour and physical layout, vertical communities seem to be obstructed by power issues and professional antagonism. In general, however, interaction and opportunity for learning and knowledge creation emerge predominantly separate from task performance.

This study shows that several fields for interaction and learning during work, as well as formal ones are weakened or disappear. The changes are often made to fulfil the strategic objective of "patient first", and include radical changes in division of labour towards a more fragmented practice. Division of labour appears to be determined by structural features like physical layout (for example single-bed patient accommodation) and process based work methods (according to the Patient Focused Redesign). For some of the occupational groups involved in this study, this results in an alignment of the work content between the occupational groups and in less cooperation. The employees perform more or less the same job side by side. This way of dividing the tasks, due to ward design and new work methods for example, result in fewer opportunities for interaction. Where practice is not shared, knowledge does not flow (Brown & Duguid, 2001).

7.3 Barriers to learning and knowledge creation

Empirical findings in this study describe how horizontal and vertical interaction as opportunities for learning and knowledge creation are obstructed by several factors. These factors are the focus of this chapter.

The influence of the combination of physical layout and division of labour on learning and knowledge creation is a contribution in this dissertation. It is difficult to establish a simple causal relationship between these two factors as they seem to mutually influence each other.

7.3.1 Physical layout as barrier

The relocation to the new clinic coincided with the collection of data for this study and it was therefore natural for the informants to compare old and new premises during interviews. Moving into the new clinic and introducing the reengineering project (patient focused redesign) has disrupted and changed the interaction pattern and the social structures (Hatch, 1997), which further influences the cooperation patterns. New functions will follow from changes in architecture and structure (Kornberger and Clegg 2004), and the most radical changes in architecture are single-bed-in-patient accommodation, the long distances and spaciousness and decentralized common spaces like patients' dining room, personnel lounges and ward reception area. These elements have implications for interaction between the employees (NHS Estates Taylor, 2005) since they cannot rely on physical proximity to "connect" with peers during the day's work.

Physical proximity within an organization is, not solely but also, a matter of the physical design of the building, floor, department etc. In the present literature on learning and knowledge creation in organizations, physical space as a phenomenon has been less focused than for example factors like culture (DiBella, Nevis, & Gould, 1996; Schein, 1996), power and artefacts. In spite of this, from an architectural point of view, modern buildings are often consciously built with meeting places, as is the new clinic in this case.

The organization under study has been partly aware of designating places for interaction in its new prestigious building. These places do not, however, seem to fulfil their purpose. One example is the "middle core", which is designed to be the hub for each floor in the new clinic – but is perceived to be a desolated area. Another example is the spacious wards with single-bed-in-patient accommodation, which seems to have the side effect that the employees rarely see each other.

In this study, the strong interconnectedness between physical layout and 'division of labour' became evident. For example: When patients have single-bed rooms with their own bathroom attached, it seems that this leads to more "working alone" for the employees, and less interaction (see table 6-5). The patient's room is a place for interaction, potentially. However, when the patients do not share a room, the nurses will seldom enter the single-bed room together and thus not see each other in action. They will not see the same patient, since there is no reason to enter the patient's room if it is not "your" patient. Later in the report (meeting), they will not discuss the patient either, since the new routine encourages that information about the patient is passed on through reading journals and reports, and not verbally. A pattern arises here: the relation between carer and patient is "privatized", and the

employees do not share information about "each other's" patients with less building of redundant knowledge (Nonaka, 1994) as a result. There is a lack of opportunity to collectively reflect on practice in practice; emphasizing the codified information about the patient is emphasized.

In the organization under study, the place to learn and create knowledge in practice has often been "in the passing" and in the hallway, in the multiple-bed patient rooms, in the crowded staffroom, and in the personnel lounge/kitchen, In the new building, the new situation with relatively few employees on each ward, long distances and open spaces without specific purpose related to the tasks, is amplified by the way the work is organized and the emphasis on codified knowledge and information. Even though the architecture in the new building in part aims at creating the spaces for interaction, such as the middle core for instance, this does not seem to fulfil its purpose due to long distances and separation during task performance (which will be discussed in detail in chapter 7.3.2). The physical layout is in line with the customization policy that the hospital has, but does not seem to take the work itself into consideration.

7.3.2 Task autonomy as a barrier for interaction

It is specifically the feature of autonomy in division of labour that seems to obstruct the opportunities for interaction and hence for learning and knowledge creation. This autonomy refers mostly to task autonomy which is influenced both by the division of labour and by the physical layout.

Physical layout of the organization, as discussed above, is closely connected to task autonomy in that when lack of physical proximity actually seems to increase task autonomy. Task autonomy is also influenced by other factors, like efficiency demand, New Public Management and new process based work methods.

Task autonomy is a limited and volatile category of autonomy that has to do with freedom for scheduling work and procedures, whereas occupational autonomy has to do with a group of people who share values and perspectives and whose identity is drawn from their work (van Maanen & Barley, 1984). In the occupational groups under study, only the midwives seem to have a high degree of occupational autonomy, and the maternity support assistants have high occupational autonomy in part of their tasks. Task autonomy is high for most of the units studied. This means that they plan their own day with only a low degree of coordination with their peers. This also means that they have a low degree of interaction and cooperation, and results in few opportunities for learning and knowledge creation in practice. This dimension literally separates the employees from each other in

their daily work. Since they have substantial freedom in carrying out their tasks, they organize tasks around some vertical relationships and dependencies such as doctor's rounds, mealtimes, and contact with domestic specialists and routines, but rarely in horizontal interaction involving peers. Collaboration is low due to efficiency demands and several of the fields for interaction have been removed or reduced to a minimum. Transfer and diffusion of knowledge, as a consequence of less face-to-face interaction, is in writing. Table 7-1 describes this relation between worker and task.

Table 7-1: Task autonomy

Condition ► Unit studied ▼	**Task autonomy**	**Occupational autonomy**	**Description of relation between worker and task**
Midwives delivery	**High**	**High**	*Have traditionally had high autonomy of both kinds. This history blocks learning and knowledge creation both vertically (with maternity care assistants and doctors, respectively)*
Maternity support assistants	**High**	**Low**	*Although lowest in the hierarchy of the healthcare workers, they have their own discipline – breastfeeding. They therefore have high occupational and task autonomy when working with breastfeeding, but low when cooperating with the midwives*
Nurses and health care assistants, cardiology ward	**High**	**Low**	*High autonomy due to* *new ward design with single-bed rooms* *patient focused redesign* *Nurses AND healthcare assistants alike perform a wide range of tasks, from advanced nursing (like administering medicines (the registered nurses)) to helping the patients with their personal hygiene and fetching their meals etc.)* *Result: Privatization of relation between nurse and patient – and between nurse and other occupations (doctors, physiotherapist etc.).*
Receptionists	**Low (?)**	**High/low**	*Their situation constitutes a contrast to their previous work. They used to have high task autonomy. Now they are in a situation where they have lost most of their tasks, and have problems performing the ones they have in the middle of a public area, due to sensitive patient information.*
Kitchen aids	**High**	**Low**	*High task autonomy, since they each have their "own" kitchen on the ward. This also means that they have a wide range of tasks from some slightly advanced cooking, to cleaning and heating pre-made food. Low autonomy within their specialized occupational field: cooking*

Task autonomy contributes to a fragmentation of practice and a "privatization" of the relationship between the task and the individual. Although task autonomy is a limited form of autonomy, it allows the

employee to outline her own day and for example divide her time between her patients, with the exception of programme items like the doctor's rounds and appointment with specialists. The tasks involve collaboration with peers and superiors only to a low degree, and this division of tasks is partly a result of the customer oriented approach ("patient first") and closely tied to the new work method (patient focused re-design), driven by the demand for efficiency. This in turn is amplified by lack of physical proximity.

Figure 7-1 below further illustrates the relation between occupational autonomy and task autonomy. As one may expect, when occupational autonomy is high, task autonomy is also high.

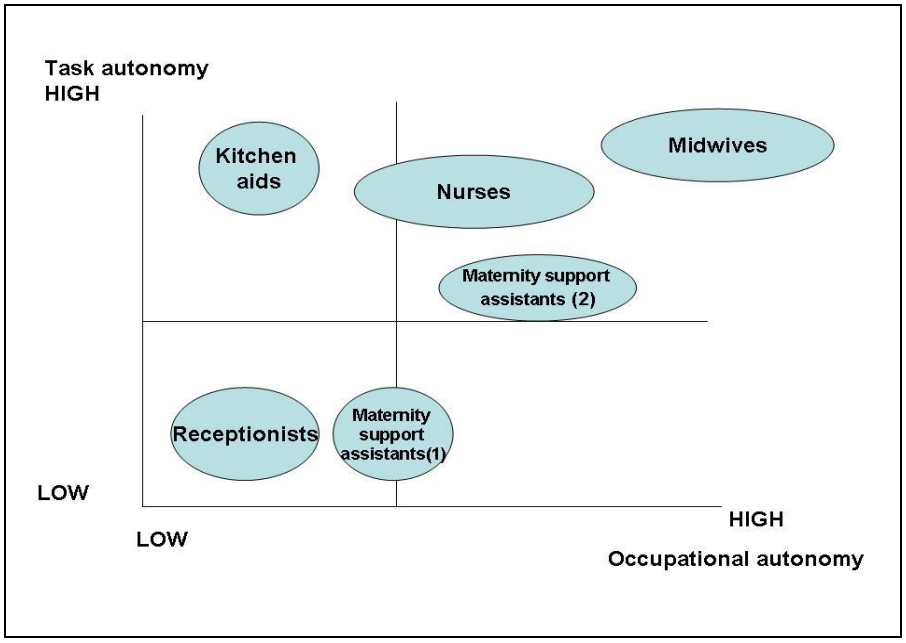

Figure 7-1: Task autonomy and occupational autonomy

The organization under study is a hierarchical and bureaucratic organization, where the procedures and regulations are further streamlined through the new process organization of the work (patient focused redesign). At the same time, the division of tasks does rather impede than facilitate interaction and task autonomy is high. Task autonomy is high even for members in non-medical support staff, where occupational autonomy as a rule is low. This task autonomy is further reinforced by the architecture and the emphasis on knowledge transfer via codification, which render meeting places "superfluous". The level of autonomy, which should contribute to emergence of communities of practice, learning and knowledge creation (Deci et al., 1989; Lave & Wenger, 1991; Nonaka, 1994), seems to pull the community

members apart and fragments practice – and appears as a prevention of opportunity for communities of practice to emerge. Practice is not shared and hence knowledge sticks to the individuals (Brown & Duguid, 2001). This is in spite of the fact that the organization calls itself a learning organization. Measures to meet competing demands like customization and efficiency, contradict the prerequisites for practice based learning.

In a knowledge perspective, autonomy enhances learning (Nonaka, 1994; Wenger, 1998). It is a critical condition for intrinsic motivation and can lead to higher job satisfaction (Deci et al., 1989). In this study the informants appear to perceive autonomy as positive and motivational. They work alone (they perceive that they work more alone now than "before") and have more autonomy in the actual task performance. On the other hand, as we see from the study at hand, they work alone and can find themselves alone in difficult situations.

In the quote below, Wenger acknowledges the paradox of autonomy as one of the conditions for "stewarding knowledge" and at the same time as a challenge for traditional organizations, like the hospital under study here.

> However, the very characteristics that make communities of practice a good fit for stewarding knowledge—autonomy, practitioner-orientation, informality, crossing boundaries—are also characteristics that make them a challenge for traditional hierarchical organizations. How this challenge is going to affect these organizations remains to be seen. (Wenger, 2007)

However, the autonomy mentioned by Wenger is not clearly defined and Wenger admits that autonomy can also be a challenge in certain organizations like traditional hierarchical organizations (Wenger, 2007). As accounted for in chapter 3.2.2, the autonomy that has emerged in this study is classified as task autonomy (Langfred & Moye, 2004). The occupational groups under study have either recently obtained increased autonomy or they have a historically contingent occupational autonomy. It is predominantly task autonomy which individuals in all four units under study have a high degree of, although for different reasons and in different ways. Task autonomy is defined as "The degree to which the individual is given substantial freedom, independence and discretion in carrying out a task, such as scheduling work and determining procedures to follow – a job can consist of multiple tasks, with variations in the amount of autonomy granted across those tasks" (Langfred and Moye 2004: 935). The employees perceive this autonomy as a very positive condition. This is in spite of the fact that their tasks span a wide scale, from routine work to more challenging tasks, which in turn diminishes the difference between the occupational groups. The registered nurses and the health care assistants for example, seem to be doing

more or less the same tasks (with the exception of dispensing medicine, which only registered nurses and doctors are authorized to do in Norway), even though their background and length of education is varied. Task autonomy contributes to fragmented work practices in the sense that the employees seldom cooperate in the hands-on situations. They appreciate the autonomy, but they miss the interaction.

Findings within each of these units in the organization under study indicate that increased autonomy in combination with a lack of physical proximity due to the physical layout, results in a low degree of interaction. Even in the unit where the physical conditions had not been altered, the high degree of task autonomy divides the workers and limits opportunity for interaction – both horizontally (within the occupation, such as the midwives), and vertically. Autonomy, in this sense, seems to "correlate" negatively with opportunity for learning and knowledge creation. Roberts suggests that communities of practice as a management tool is more fit for organizations where the tasks require tailoring, with autonomous workers and decentralized organizational structure (Roberts, 2006). Roberts does not give a detailed definition of the concept of autonomy, but in the study at hand the high degree of task autonomy seems to have an opposite effect. It does not seem to contribute to the interaction which is the core for communities of practice and for sharing tacit knowledge.

Coupled with the practical perception these occupational groups have of their work, the degree of autonomy, whether new or historically contingent, results in lack of interaction and hence lack of opportunity for learning and knowledge creation. Further, the contradictions between the different occupational groups (doctors and midwives) and the managers on different levels (which on this ward also coincide with different professions) impose constraints on the dynamics of the interaction (Thompson, 2005).

7.3.3 Barriers to learning and knowledge creation – findings

The last sub-research question concerns the possible obstructions of the opportunities for learning and knowledge creation, and as mentioned, this is where the most prominent findings in the study emerged. The factor that appeared as barriers in all units was: *Division of labour – task autonomy*, seemed to be present in all units. The second barrier: *Physical layout – lack of physical proximity*, appeared in all units except for the maternity and gynaecology ward, which means that this differs along the dimension 'old/new premises', as mentioned above. Further there seems to be an interaction effect of these two factors, in that they amplify each other in their role as a barrier to opportunities for learning and knowledge creation.

In the following chapter, the comparative aspect in the study is further elaborated on. The units under study were theoretically sampled in order to compose a collection of units that varied along two dimensions: distance to core (medical wards to non-medical support departments) and in old vs. new premises.

7.4 Differences between the units?

The research design for this study includes an internal comparison between units within the organization, two medical wards and two non-medical support departments. In this chapter, similarities and differences are discussed in two respects:

A) Similarities and differences between
   i. the two departments under study that are close to the core activity of the hospital: medical personnel on two hospital wards
   ii. and the two non-medical support departments

B) Similarities and differences between
   i. departments in the old premises
   ii. and departments in the new premises

The similarities between the units studied, when the focus is on opportunities for learning and knowledge creation and on what obstructs the interaction that creates these opportunities, seem to be larger than the differences. The employees in the units under study are mostly not "classical" knowledge workers (see theoretical discussion in chapter 2.2). With the exception of the midwives, these occupations have a history of low occupational autonomy. They now experience a high degree of task autonomy due to organizational and efficiency issues – rather than knowledge issues. Task autonomy refers to the freedom and independence individuals have in carrying out their daily tasks (Langfred & Moye, 2004). In all four groups there is a low degree of interaction during task performance, and this will in turn limit reflection on practice during task performance. Reflection on practice is removed from the actual hands-on situation, and this means that they seldom see each other in action. There are very few traces of planned facilitation of learning and knowledge creation, except isolated appeals from the middle managers (see for instance chapter 6.2).

In this pattern, the midwives do not fit in entirely. Their autonomy is rooted in their profession. However, this professional autonomy seems to have the same effect on interaction as the task autonomy has on the other

occupational groups, in that it contributes to obstruct interaction during task performance.

The main difference between the support staff units and the wards seems to be: 1) how they are treated by the management and 2) how they are organized in terms of the organizational design and division of tasks. The support staffs under study seem to be marginalized in the organization within the strategy for knowledge management, and they are practically excluded from formal training activities and knowledge development opportunities. This is what Brown and Duguid (2000) call 'compartmentalization', when management concentrate mainly on the 'elite workers' and 'hold the majority of workers tight within the clamps of process' (Brown & Duguid, 2000:74). This is in spite of the fact that they are often first line workers and have frequent contact with the patient ("the customer"). The compartmentalization (Brown & Duguid, 2000) reflects the management's view of non-medical staff's role in the learning organization, and this is underpinned by the view of knowledge. This forms a paradox between the market-oriented policy inspired by New Public Management, and the lack of attention paid to the support staff, since support staff is largely composed of front line workers like receptionists and the ward kitchen staff. The support staffs react with frustration, there is a feeling of powerlessness, of not feeling included and they perceive that they lack opportunities for interaction both vertically, with other occupational groups, and horizontally within the group.

So how can the units under study contribute to the insight of the differences between the new and the old building concerning places for interaction that can lead to opportunities for learning and knowledge creation? The maternity/gynaecology ward is the only unit under study that is situated in the old building. This ward seems to have two characteristics relevant to this issue:

►Place for contactivity (Earl, 2001): in this case the staff office as the hub of the ward. The staff office is a place that "everyone" passes through, messages are given and received and the ward secretary plays a key role as a centre for giving information in and out, or just glean pieces of information as they pass by. This place seem to function a as a place for contactivity since these tasks of interactive character are linked to it.

►Slack in the organization (Takeuchi, 1998). The frequency with which staff are present in the lounge since there is a lot of waiting on this ward due to "nature" - since most births are not planned and the employees have time to talk to each other while they are waiting "for something to happen".

7.4.1 Differences between the units – findings

To wrap up this chapter, I return to the dimensions: distance to core and old/new premises. The most striking difference between the medical and non-medical departments is the difference in the attention they receive from top and middle management.

Factors such as physical layout and division of labour seem to function as barriers to interaction and to learning and knowledge creation in all units. In chapter 7.3.3, I concluded that lack of physical proximity seemed to be a barrier to learning and knowledge creation and that this is more visible in the new clinic than in the old building. Occupational autonomy and power governed relations seem apparent in the maternity/gynaecology ward, more so than in the other wards. Division of labour follows the different professions in the maternity/gynaecology ward, whereas in the cardiology ward the differences between for example what the nurses do and what the healthcare assistants do, is diminishing. The same phenomenon is true for the kitchen aids; they move towards a more unspecialized and de-professionalized range of tasks. On the other hand, the individuals have more autonomy in the organization of their daily tasks. The support departments struggle to be included and to create fields for horizontal interaction; within the group. The contrary can be observed in the medical staff, where they resist participation in vertical communities.

To sum up I return to the main research question: *Where and how does learning and knowledge creation take place within different units in a hospital?* The picture painted by the findings under the headings of the sub-questions show a disconnection between the intended objective to be "a learning organization" and the measures taken to put it into operation. The mapping of the places and opportunities for learning and knowledge creation in this organization was overshadowed by the barriers to learning and knowledge creation during work. And on this specific point there did not appear to be any major differences between the units under study.

7.5 Contributions

In the dissertation, the road has been followed from stating the research questions, through a theoretical review, an empirical analysis and a discussion. The aim of this chapter is to describe how the findings in this study contribute to existing theory, and I investigate and argue for possible relations between concepts that emerged from my data.

The main research question in this study has been: *Where and how does learning and knowledge creation take place within different units in a hospital?* I have posed the following sub research questions:

i) What characterizes the strategy for knowledge management in a hospital?
ii) Where are the opportunities for learning and knowledge creation in a hospital and how do they differ between different units?
iii) In what way are the opportunities for learning and knowledge creation obstructed in the different units of a hospital?

The first contributions I will point out pertain to the general issue of organizational learning and to the understanding of the learning organization. This account of the general contributions is followed by an account of the contributions tied to the individual research questions.

7.5.1 General contributions

Through a study of a hospital this study contributes to increase the understanding of how the idea of a learning organization is perceived by the management, and what measures they put to work in order to become a learning organization. The lack of attention paid by the management to work based learning in a being a learning organization and the identified gap between the vision of the learning organization and the learning activities initiated contributes to an increased understanding of the gap between the fashion of management (Scarbrough & Swan, 2003) and implementation in practice.

The second general contribution is of a methodological character and contributes to a better understanding of how learning and knowledge creation take place during work in *different kinds* of organizations. It is a contribution in itself to study these issues in a hospital and to include different units within the hospital, including groups on the low end of the "knowledge hierarchy", like the support staffs. The closeness to data and the detailed description has been an advantage in the interpretation and meets the call for studies of work as such and of "the return to practice" called for in the field (Kornberger & Clegg, 2004).

On the practical side, this study is a contribution to inform managerial practice of the challenges for knowledge management in complex and diversified organizations with employees with varying qualifications, insights and occupational backgrounds. In this study, different groups are combined, from nursing staff to support staff. Even though there seems to be little difference in how these groups learn and perceive opportunities for

knowledge creation, there is a difference in how they are treated by the management from a knowledge perspective. There are few studies on knowledge management or organizational learning with focus on occupational groups with low degree of theoretical knowledge intensity, and it appears that *knowledge* is often operationalized as *theoretical knowledge*. This compartmentalized "way of thinking" (Brown & Duguid, 2000) excludes, in this instance, the support staff from the category of knowledge workers. It is evident from this study that both the support staff and the medical staff use knowledge in their work and also need to learn and develop their knowledge with others. This has implications for management and calls for attention from management that extends to all occupational groups on knowledge issues. These managerial challenges are increased by external pressure like short-term demands in the shape of New Public Management, which in its assumptions and implementation seems to contradict the introduction of measures to become *a learning organization.*

From these general contributions, I move to the contributions connected to the individual research questions as stated in this study. The findings pertaining to the first research question on strategy for knowledge management is viewed to have implications predominantly for practice.

7.5.2 Strategy for knowledge management

In the first sub-research question I asked about the characteristics for the strategy for knowledge management in a hospital. The answer to this research question forms a contribution mainly in the practical vein, and we rewind to the figure introduced in the theory chapter (figure 3-1) – here as figure 7-2..

This figure is inspired by Nonaka (1994) but the horizontal dimension deviates somewhat from the classical "tacit to explicit" categorization of knowledge (Nonaka, 1994) (for discussion see chapter 2.4). Practice knowledge is a concept that includes the tacit dimension of knowledge. However, it is wider because it also includes codified knowledge that is articulated in interaction and collective reflection.

All four "squares" in the model each represent different forms of learning and knowledge creation, and on different levels. The pattern that arises from data shows that the emphasis is on codified knowledge and learning on the individual level which means that placing Bell Hospital in this figure would look like the following figure 7-3.

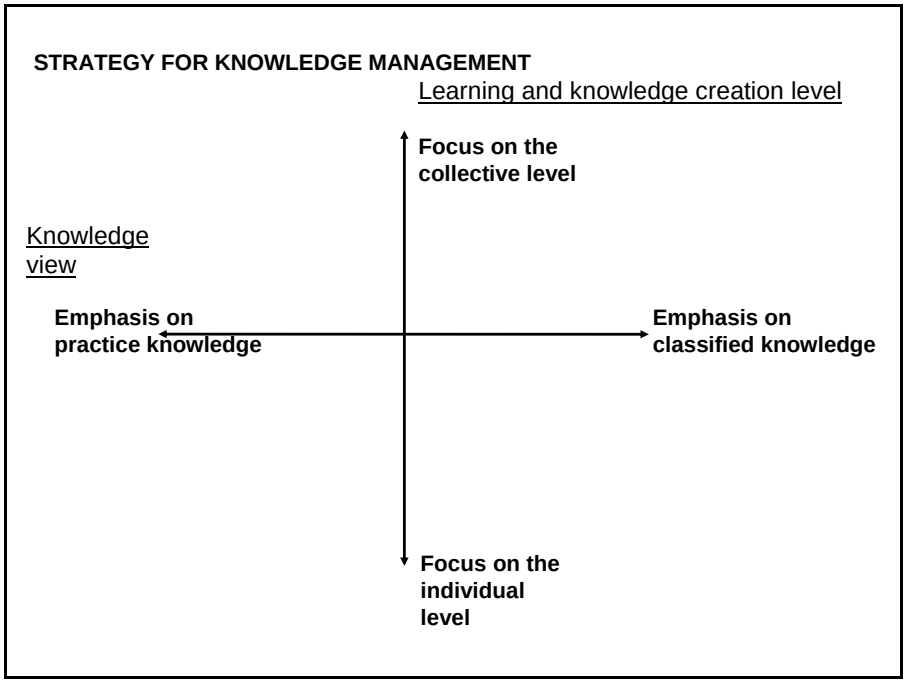

Figure 7-2: Assumptions on knowledge and learning decisive for knowledge management strategy (identical to figure 3-1)

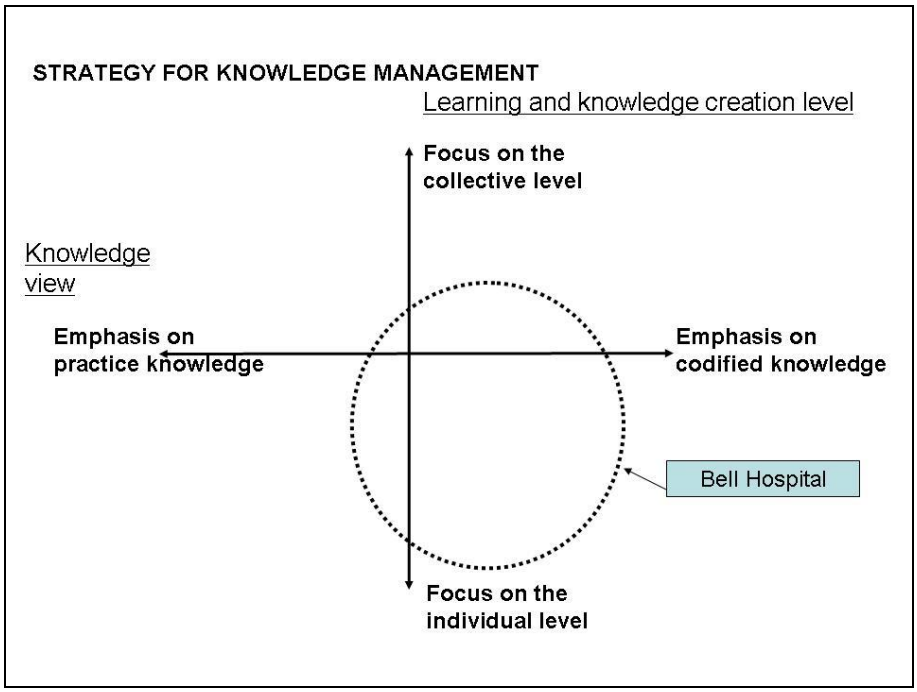

Figure 7-3: Situating Bell Hospital

Subsequently the next figure illustrates how the strategy for knowledge management as studied here is asymmetric compared to the idealized model adapted from Nonaka (1994). Figure 7-4 illustrates the combination of the conceptual model and empiricism. The emphasis on the individual level for learning and on classifiable knowledge pulls Bell Hospital downwards and to the right.

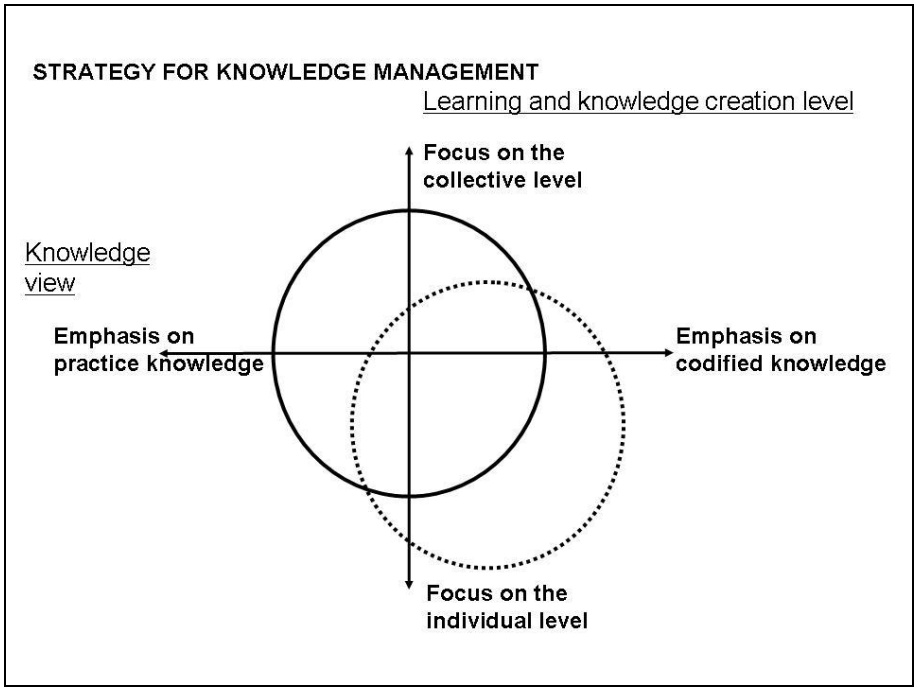

Figure 7-4: Theory meets empiricism

Findings from the study of the strategy for knowledge management in Bell Hospital indicate that the organization is positioned to the southeast of the centre, as illustrated by the dotted circle. There is focus on codified knowledge and individual learning. This is discussed in chapter 7.3 and in chapter 7.4, and is reflected in the measures taken by the management to enhance learning and knowledge creation, namely courses and project work. It is further reflected in how the hospital converts fields for interaction and collective reflection to individual learning situations and in how face-to-face communication is substituted by access to codified material. This lopsided emphasis on one of the two complementary dimensions of knowledge and learning, social learning theory (vs. the cognitive view) has implications for the strategy for knowledge management. Data from this study enlightens

how the existing view of learning and knowledge influences where and how learning and knowledge creation takes place in the organization.

Of the measures taken in the strategy, the management omits to include the work based learning and knowledge creation in its strategy for knowledge management. In addition, the detailed study of the units (in chapter six) also reveals that additional organizational measures taken to comply with demands like efficiency etc. further amplifies the emphasis on codified knowledge. Some of these demands have their origin external to the organization, and in the following, one such dominating influence is discussed: the influence of New Public Management.

In viewing organizations holistically, the complexity with contrasts and contradictions is fully demonstrated. Organizations live with these contrasts, and the most intricate contrast is perhaps to "choose" between measures to meet objectives in the short versus the long term. One example of this for a public organization like a hospital is what seems to be the incompatibility between, on the one hand, New Public Management, which is a collection of reform initiatives and demands in the public sector, and the endeavour to become a learning organization on the other. This is due to the demands and assumptions in the two perspectives. New Public management has increased efficiency and market orientation for economic reasons as goals. The results are measured through economic measures and patient (customer) surveys. However, implementing a more efficient organization implies eliminating slack which can be a condition that permits interaction and learning. It also implies an emphasis on codified knowledge and the individual as the learning unit, since it appears as more efficient for example, that the nurse or the doctor reads a report on the specific patient than to enter into a lengthy oral report with everyone present. Data in the study, however, shows that the written report cannot always communicate the details of the situation in the way face-to-face verbal communication can. Further, as we have seen in this study, efficiency demands increase task autonomy, since it appears as more efficient to work alone than to cooperate. The market orientation or as in this case the vision of "patient first", involves for example single-bed rooms for patients and small wards. This increases the customer satisfaction, but it also increases the task autonomy since the patient-nurse relation becomes "privatized". It decreases the interaction between employees due to long distances and few employees on the same ward. This can be illustrated as follows:

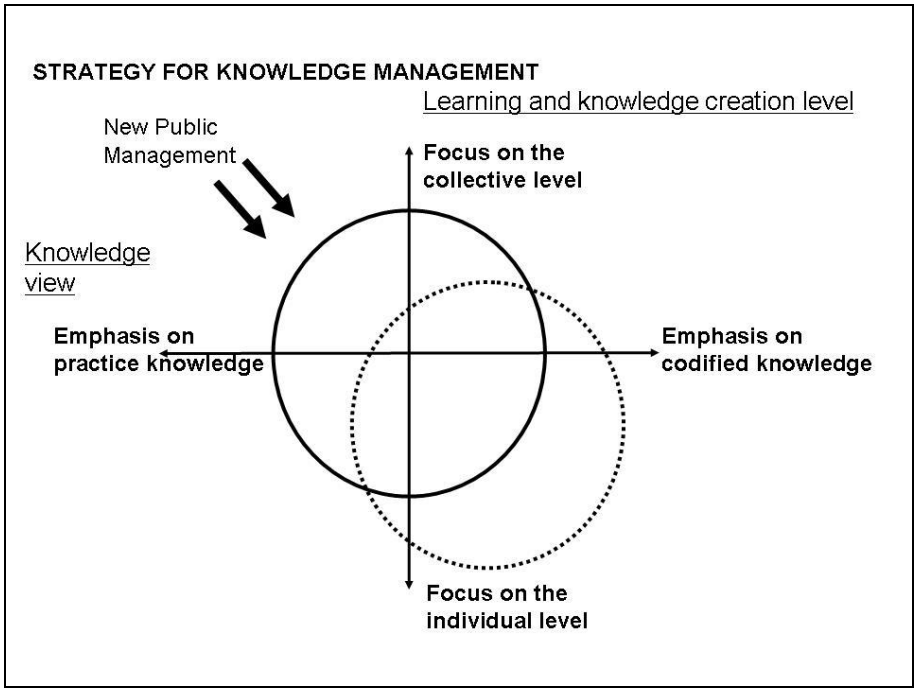

Figure 7-5: Influence of New Public Management on the strategy for knowledge management

Organizations like hospitals have to exist in this reality with contradictory demands. This study may contribute to increasing the level of awareness of how NPM affects learning and knowledge creation. Strategy for knowledge creation is an issue for further research, and I will return to this issue in chapter eight.

7.5.3 Learning and knowledge creation during task performance

In referring to the second sub-research question: Where are the opportunities for learning and knowledge creation in a hospital, and how do they differ between different units?, the contribution to theory is in the approach and in the conceptualization of the analytical dimensions. The approach was inspired by grounded theory in that the analytical dimensions emerged during analysis.

Dividing the interactions in horizontal and vertical communities will contribute to increase the understanding of the connections between learning knowledge creation, work, and physical layout. This insight forms a contribution to the literature since learning and knowledge creation that can

take place horizontally between peers, differs from vertical interactions, for example superior or subordinate or across departments or disciplines. It is likely that peers will have a higher degree of redundant knowledge and this gives a different basis for learning and knowledge creation than vertical interaction.

Horizontal communities, although focused as such in existing literature (for discussion see chapter 3.1) are found to be scarce in this study due to division of labour and physical layout. Lack of opportunities for horizontal interaction during task performance is a further consequence. While opportunities through horizontal interactions are scarce, vertical interaction appear more as a result of organization of work. The horizontal communities seldom reach the in situ domain, and contrary to what is proclaimed in the normative literature, the horizontal interaction seems to be further afar from the task performance itself than the vertical interaction appears to be. This pinpoints the difference between interacting in general and in operational proximity (Tagliaventi & Mattarelli, 2006), and having the opportunity to collectively reflect-in-action and not just on-action (Schön, 1983). This study contributes to connect the notion of place and division of labour with collective reflection in practice.

The findings that form answers to this research question contribute to attract attention to the role of the physical layout. Physical layout has largely been taken for granted or seen as interchangeable with virtual and emotional places, as discussed in chapter 7.2.1. Physical layout appears to be closely connected to 'division of labour', and this connection has emerged as vital for understanding where learning and knowledge creation takes place in the organization under study. Findings contribute to connect the physical layout to division of labour and they seem to form a self-reinforcing spiral. Though interaction is intended and facilitated through physical layout (by designing for contactivity, Earl, 2001), as in the new clinic in Bell Hospital, this must be seen in connection with the organization of work in order to function according to purpose.

Although several of the theoretical contributions call for organizing the places for interaction that can lead to learning and knowledge creation (Brown & Duguid, 2000; Nonaka et al., 2000; Rainbird et al., 2004a; Wenger et al., 2002), few details are furnished on how this can be facilitated. In this study barriers to learning and knowledge creation in the work place have emerged and have perhaps formed the most important contributions of the study, which is presented in the next chapter.

7.5.4 Barriers to learning and knowledge creation

As demonstrated in figure 7-5 in chapter 7.5.2, Bell Hospital seems to be "off centre" compared to an idealized model where learning and knowledge creation covers both codified and practice/tacit dimension of knowledge on all levels of the organization. Two structural factors seem to reinforce this "off-centre" position. These are division of labour, which contributes to increase task autonomy, and physical layout, which also increases task autonomy and in addition, impedes interaction during work. Findings in this study indicate that these factors impede learning and knowledge creation on the collective level during work, as illustrated in figure 7-6 below.

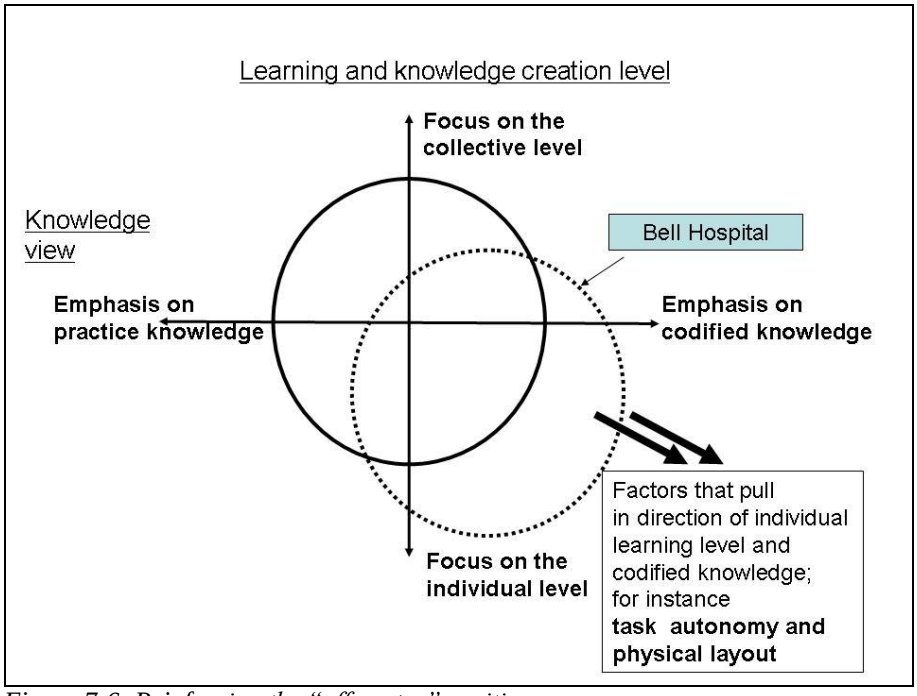

Figure 7-6: Reinforcing the "off-centre" position

The contribution in the findings from the investigation of the third sub-research question calls for stressing the significance of structural factors for learning and knowledge creation during work. In this study, physical layout and task autonomy have emerged as structural conditions. The two factors can be seen as barriers, separately, or as having an interaction effect.

As discussed in chapter 3.2, the influence of physical layout for learning and knowledge creation has largely been taken for granted in the literature. The

communities of practice framework, for example, takes "the place" and "the opportunity" for interaction for granted. When employees do not work in the physical proximity of each other this will decrease the interaction they have and fewer opportunities for learning and knowledge creation will emerge. In this study we especially find this in the new building where the distances are long and only very small groups of staff are collocated, and the lack of physical proximity seems to inhibit interaction.

The concept of autonomy is used in a number of fields and with different meanings, such as for example in moral and political philosophy and in theory on motivation. Even related to work, as in the study at hand, it is used in a number of combinations: Task autonomy (Langfred & Moye, 2004), occupational autonomy (van Maanen & Barley, 1984) and professional autonomy (Løwendahl et al., 2001). These categories of autonomy are however not mutually exclusive. Task autonomy is limited to the freedom to schedule and determine how and when a task is to be carried out (see chapter 3.2.2 for detailed account). Data from this study shows that most of the groups under study have a high degree of task autonomy. Even members of groups with low occupational and professional autonomy, like the kitchen aids, seem to have high task autonomy. This category of autonomy is not necessarily connected to knowledge intensity. Rather it is a result of the demand for efficiency and of the physical layout that enhances task autonomy.

Task autonomy does appear to have a motivational effect, which is in line the view of autonomy in motivation theory (Deci et al., 1989). But task autonomy, increased by division of labour and physical layout, seems to emerge as a hindrance to learning and knowledge creation, which calls for a differentiated and situational view of autonomy as a condition for learning and knowledge creation. In this organization, a high degree of task autonomy seems to inhibit the opportunity for interaction. This is contradictory to the positive value that autonomy has in research on learning, motivation, as a facilitating condition for knowledge creation in Nonaka's framework (1994), and in the communities of practice framework, although Wenger does admit that this is problematic (see chapter 3.2.2 and 7.3.2 for discussion). In short it appears that cooperation and interaction are downgraded due to efficiency demands, which means that when task autonomy increases, the level of interaction decreases. There is however reason to believe that autonomy increases interaction up to a certain point, since very low autonomy will strangle both opportunities and motivation, as existing theory will assert), and as we see in one of the groups under study, the receptionists. Figure 7-7 illustrates the relation between opportunity for interaction and task autonomy. It is assumed that a high degree of opportunity for interaction leads to increased learning and knowledge creation during work.

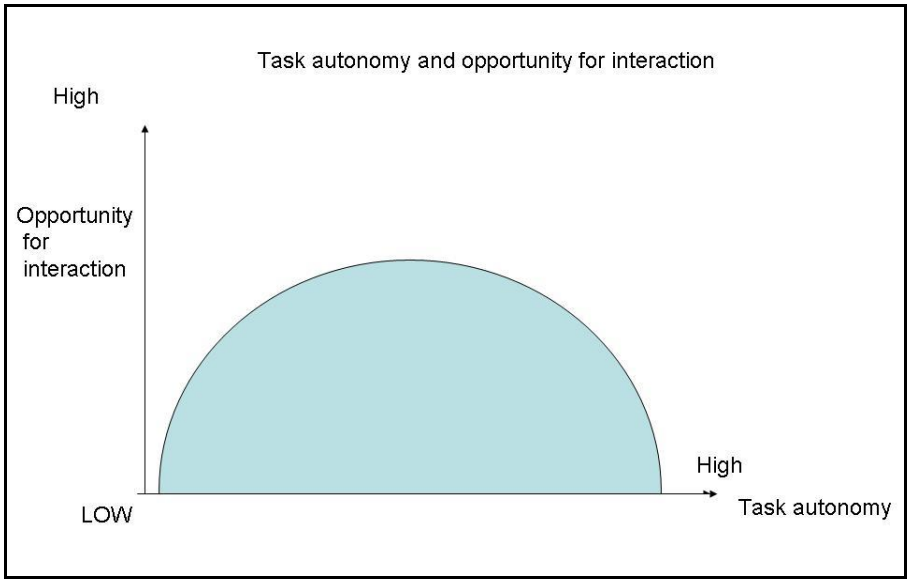

Figure 7-7: The relation between task autonomy and opportunity for interaction.

This study was also a study of different units in an organization, operationalized as support departments and core departments (see chapter 7.4 for discussion).

This study is undertaken in an organization where both scientific and theoretical knowledge as well as practice knowledge and practical work play are of great importance. Previous empirical contributions (see chapter 3.3 for review) have mainly been performed either on apprentice situations or in knowledge intensive organizations, or the combination of the two. The selection of the specific case is a contribution in itself. An opportune question to ask is whether the *knowledge intensive company* is a diluted concept in need of renewal. This is something that should be looked into in future research. Consequently, research on learning and knowledge creation should also focus on organizations that do not necessarily fit the characteristics of knowledge intensive companies.

In this chapter I have described how this study can contribute to further development of the body of theory, through focus on concepts and factors taken for granted or overlooked in the existing literature. Some of these contributions will inspire propositions for further research in the following chapter eight.

8 Suggestions for future research

Asking new questions is part of the contribution from research, and based on the findings and contributions drawn up in chapter seven, suggestions for future research in the form of propositions are presented in the following. The propositions are forward looking and are causally modelled. Largely this chapter follows the structure of the sub-research questions. In the following, the nine propositions will be presented with a short explanation.

Strategy for knowledge management

Bell Hospital in this study does not have an explicitly formulated strategy for knowledge management drawn up in a document. It has been confirmed in previous studies that lack of a strategy can be seen as a barrier to knowledge management (Nicolini et al., 2008). The question of formulating and implementing a strategy for knowledge management touches on at least two issues: the underlying assumptions on knowledge and learning and subsequently how to manage knowledge (as discussed in chapters 2.1 and 7.1). Findings from the present study show that the strategy for knowledge management seems to focus mainly on the individual level of learning and on codified knowledge, in addition to regarding learning as an activity separate from task performance and omitting learning during work. The role of strategy for knowledge management is an issue for further research and I have developed the following proposition for this purpose.

> *P1: Hospitals will improve their learning by formulating an explicit strategy for knowledge management that takes into account learning during work.*

Opportunities for learning and knowledge creation

Following the issue of how to manage knowledge, leads to a proposition on the relationship between managing and learning (discussed in chapter 3.1.1). The balancing act of facilitating organizational learning vs. seeing learning as emergent (as discussed in 7.2.2) in particular in horizontal interactions, described for example in the communities of practice framework (Wenger, 1998) and discussedin chapter 7.2.2. An issue for future research is stated in proposition number two:

> *P2: Managerial facilitation of horizontal interaction will increase learning and knowledge creation in hospitals.*

Vertical communities (as discussed in chapter 3.1.2 and chapter 7.2.2) are part of the division of labour and the management of work. Due to this *management* employees interact in different constellations around task performance, in and out of action. In the data material there appeared to be a trend towards turning face-to-face vertical communities into "reading circles", where for example oral report is substituted by written material (discussed in chapter 7.3.1). I suggest the following proposition on vertical communities:

> *P3: Face-to-face interaction in vertical communities will positively influence work based learning in hospitals.*

Barriers to learning and knowledge management

The findings in this study indicate that lack of physical proximity inhibits interaction and therefore inhibits learning and knowledge creation (as discussed in chapter 7.3.1 and 7.5.4). Research on place for interaction as part of the physical layout goes on in different fields, also for example in the field of architecture. However, there seems to be watertight compartments between the fields here, and within organizational learning research, physical layout is either ignored or taken for granted. Findings in this study suggest that physical layout plays a role for learning, and future research should attempt to integrate the different streams of literature, which would also give a contribution to practice. Further research on physical proximity is needed and I propose the following proposition:

> *P4: Lack of physical proximity during task performance impedes interaction and hence learning and knowledge creation during work.*

In the present study there are some indications that single-bed-in-patient accommodation negatively influences the rate of interaction between employees. Single-bed-in patient accommodation is a relatively new phenomenon in Norway. There has been some research on this arrangement in Great Britain and the Netherlands (NHS Estates Taylor, 2005), albeit without including organizational learning. I therefore propose the following proposition for future research on single-bed-in-patient accommodation:

> *P5: Single-bed-in-patient accommodation in hospitals negatively influences the rate of interaction during work and thereby the opportunity for learning and knowledge creation between employees.*

Autonomy is discussed in a vast number of areas, and is possibly a trend related to more focus on the individual in general in society. I have contemplated whether autonomy can be seen in connection with a 'privatization' of the relationship between the task and the individual. This relationship between the employee and the patient (customer, pupil or student) becomes 'privatized' as a consequence of a high degree of autonomy. This study indicates that high task autonomy pulls the individual employee away from collaboration and pulls focus away from the collective. An interesting question for further research is to investigate whether this limited form of autonomy is actually more or less mock-autonomy that has little to do with other types of self-organizing, but more with being organized and being at the patient's service and available at all times. I therefore suggest the following proposition:

> *P6: Task autonomy 'privatizes' the employee's relation to the patient and to the task, and this 'privatization' decreases the opportunities for learning and knowledge creation.*

Findings from this study call for further investigation of the concept of autonomy (as discussed in chapters 7.3.2 and 7.5.4), and especially in settings that are hierarchical and bureaucratic like the hospital in this study. Findings from this study call for a reconsideration of the role of autonomy as a condition for learning and knowledge creation in this category of organization, and a reconsideration of the role of autonomy in horizontal interactions among peers (and possibly within the communities of practice framework). I suggest the following propositions for further research:

> *P7: Horizontal interaction improves learning among peers, but is inhibited by a high degree of task autonomy*
> *P8: Opportunities for learning and knowledge creation horizontally in organizations first increases, then decreases – as task autonomy increases.*

Differences between units

There is a lack of studies on learning and knowledge creation of groups in the low end of the organizational and knowledge hierarchy, and I claim that this is an issue for future research. Findings on differences between units in a hospital indicate that the same conditions contribute to work based learning for support staff as for units closer to the core activities in the hospital, like the medical personnel working on wards. I state the following and last proposition:

P9: There is no significant difference between groups in hospitals in terms of where and how work based learning and knowledge creation take place.

In this chapter, propositions for further research have been constructed on the bases of findings and contributions in chapter 7. In the next chapter, which is the final chapter in the dissertation, I turn to some reflections on strengths and weaknesses of the study at hand.

9 Strengths and weaknesses

The aim for this study at hand has been to examine the existing literature and research as well as to conduct an in depth study of different units in a hospital. Within the limited timeframe of this project, and with the limited resources at my disposal, I had to by-pass a number of side roads and yet, there were a number of pitfalls I did not manage to avoid.

Brown and Duguid call for "looking at knowledge and organization through the prism of practice – the way in which work gets done and, we would argue, knowledge is created" (Brown & Duguid, 2001:200), which I have asserted in this study. My attempt has been to link the scientific positioning, the theoretical approach and the methodology. The method for data collection is in line with the theoretical approach in that I have created data and knowledge in interaction with the informants and the field in general, which has been learning and knowledge creation in organizations, where our knowledge has been developed during our interaction. This is compatible with the knowledge view of seeing knowledge as a process, and shared and created collectively.

I further see it as a strength that the study is very close to the data and to work in the hospital itself. This has been a goal for me and I feel I have succeeded. This being said, strengths are usually also weaknesses when viewed from another side. The complexity of the context under study has been overwhelming to battle with. I have had an introspective focus, and I have touched only briefly on the external environment of the organization under study in an attempt to contextualize the case. It is not sufficient for an organization to learn from its own experience and for the employees to learn from each other. They also need considerable input from external sources. I have not omitted this because it is not important, but 'you cannot study everything'. On the other hand, a case study is always in danger of doing just that – or at least of including too much, and in my attempt to use rich data to ensure contextuality and validity, I have ended up with a comprehensive and detailed description. In the last phases of the write-up, my attempt has been to focus and narrow down. I still think it could have been a more focused study. However, this is further complicated by the explorative approach and the fear of de-contextualizing. I may therefore have had one foot in the "description ditch", in the way I have included a large amount of data.

The theory applied in this study is fragmented and the concepts lack settled and widely agreed upon definitions. Although theories on knowledge and learning are by no means new, these topics are reasonably new within

organizational theory. The discussions on learning and knowledge creation in organizations are often abstract, and the theories can seem idealized and normative, and detached from the practices of learning and knowledge creation in everyday life. The consequences of this are twofold. Firstly, it has influenced the possibility to present a comprehensive and consistent theory chapter. In spite of this, the aim has been to successfully present such a chapter. Secondly, it has given me an opportunity to contribute to a developing discipline, where research on how opportunities and barriers to learning and knowledge creation are imperative for further development of the field. The choice of a theoretical basis could have been approached in different manners. The theoretical field of organizational learning is fragmented and extensive. I have been conscious about not including everything, but at the same time struggled to see what I should include and what I ought to emphasize. There are a number of phenomena that could have been included. Of these I will mention culture and power, particularly due to the choice of a hospital as the case under study (Currie et al., 2008; Nicolini et al., 2008). Omitting these and other thematical approaches is due to the delimitations I have had to make.

Methodologically, I started out with creative ambitions. Several researchers call for more studies on how people actually work (Barley in Orr 1996; Yanow 2006). I did observe in the hospital for quite a few hours and observation data have been valuable. Observation in a hospital is however complicated by the nature and sensitivity of the enterprise. I chose not to observe situations where patients were involved. During the process, I have gained much respect for observation as a tool, particularly given how time-consuming and boring it can be to observe a regular workday. Most of the time, not much happens in a hospital corridor. The study might have benefited however from more patience on my side in observation situations and from observation data from patient situations etc. This is especially so since an important discussion in the study is on how the employees reflect on action and in action, in the hands-on situations, and on the question of whether they see each other in action during work.

In this chapter I have accounted for some of the strengths and weaknesses I see in this study. The shortcomings are mainly on the extensive and detailed presentation. On the other hand this is also a strength since I believe that I have kept in close contact with the data. Even in an extensive study like this there are matters that would have benefited from a more in depth examination.

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APPENDIX 1: INTERVIEW GUIDE - EXAMPLE[12]

Intervju guide Bell hospital **mandag, 4. april 2005**
Start 14. mars 2005 – Kvinne/barn

Innledende kommentar:
Det er ikke ledelsen som har satt i gang denne undersøkelsen.
Dette er ikke en trivselsundersøkelse.

GRAND TOUR: Synes du at du lærer noe på jobben? Hvordan? Fortell?

How does an organizational context affect the sharing and creation of knowledge?

- In what contexts is soft knowledge shared and created?
- What factors influence knowledge sharing and knowledge creation in an organization?
- How does knowledge sharing and knowledge creation differ according to level of the professional context?

Personalia:

1. **Navn, alder og stilling, arbeidssted**

Individuell læring:

2. Kan du fortelle meg om en typisk dag på jobben. Hva skjer fra du går hjemme fra? Hva tenker du på på veien til jobben? Er det noe som bekymrer deg da?
3. Lærer du noe på jobben?
4. Hva lærer du?
5. Synes du at du lærer noe nytt hver dag?
6. Fortell om en gang du lærte noe nytt.

Ba – læring sammen – communities of practice:

7. Hvor på posten snakker dere sammen?
8. Hvor jobber du alene?
9. Hvilke møter har dere og hva snakker dere om?

Struktur og profesjoner:

10. Hvordan er det med ansvarsfordelingen?
11. Lærer du av samarbeidet med legen?
12. Lærer du av samarbeidet med de andre barnepleierne?

[12] I call this an example due to the fact that these interview guides were slightly altered and tailored depending on the informant, what kind of job she/he had and what unit she/he worked in.

13. Lærer du av jordmødrene?

Vilkår:

14. I hvilke situasjoner har du det best på jobben?
15. Er det noen situasjoner du ikke liker?

Organisatorisk kontekst:

16. Hva betyr det at Bell Hospital er en lærende organisasjon?
17. Vet du at Bell Hospital er en lærende organisasjon?
18. Hvordan har du fått greie på det?
19. Hvordan jobber sykehuset for å bli en lærende organisasjon?

Forbedringspotensiale – learning from experience:

20. Har du inntrykk av at dere gjør dere nytte av erfaring?
21. Har du et eksempel på at dere gjør dere nytte av erfaring?
22. Hva kunne vært gjort annerledes med måten dere jobber på?

Formalisert opplæring:

23. Hva med mer formalisert opplæring?

Rutiner og prosedyrer – barrierer:

24. Hva med rutiner og prosedyrer? Er det noe problem med slike prosedyrer?
25. Når kom det en ny rutine sist?
26. Fortell om en gang en slik rutine blir brutt?
27. Når blir de endret? Fortell om en gang de har blitt endret
28. Tror du det er mange rutiner som ikke er nedfelt skriftlig?

Prosjekt styringssystem: Målingsprosjektet Kvinne/barn

29. Kjenner du til prosjektet?
30. Var du med på prosjektet?
31. Fortell om prosjektet.

mandag, 4. april 2005

Etty