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The power of high-quality connections in knowledge work

A qualitative study of knowledge sharing practices in oil exploration and management consulting

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CONTENT

ABSTRACT

In response to a lack of practice-based approaches to knowledge sharing, and the call for bringing human actors, their actions and interactions to the centre stage of organizational research, this thesis adopts a practice-lens to knowledge sharing. The aim of the thesis is to identify how knowledge sharing practices look like when at their best, and what role high-quality connections play in such practices. Based on selected observations and interviews in two different organizational settings (oil exploration and management consulting) five best practices for knowledge sharing are identified: (1) *mobilizing engagement*, (2) *interacting offstage*, (3) *making it tangible,* (4) *sharing space,* and (5) *help giving/help seeking*. The authors find that high-quality connections play a decisive role in all of these practices. In some cases high-quality connections *enable* the practices, in other cases the practices *build* high-quality connections. Thus, this thesis provides insight into how knowledge sharing practices both shape, and are shaped by, high-quality connections. Implications for theory and practice are discussed.

PART I: INTRODUCTION

Prelude

A client had hired Ida to develop and implement a new technical solution. She was assigned to a team consisting of five people from the client side. Ida soon realized that she was the one with the greatest technical competence in the team. She got the impression that the other team members were uncomfortable working with technical gadgets. Therefore, Ida had invested a lot of time in being available so that her colleagues could ask her if they wanted to test the technical solution. One Friday evening Ida was working late. It was 8pm and suddenly a colleague (from the client side) logged on to the system. Ida registered that he wore an apron, and was cooking in his kitchen at home. She was surprised by the fact that he called her this late, but glad that he did because she also needed to try out a few things. The colleague asked Ida: "Would you mind if we just test the technical solution right now, while I'm boiling potatoes?" Ida answered: "No! Of course, sure we can!" Without any stress, Ida and her colleague could trial and error together. While they tested the technical solution they laughed and shared experiences and insights. They discussed issues that emerged, and came closer in reaching a final solution. "My client knew that I was available; I was there to help and it was like "We're in this together"", Ida said. After this episode something happened in the relationship between Ida and her colleague. "It felt good. My colleague signalled that he was very interested in collaborating; he used his evening to test the technical solution, and this gave an extra boost to the team in the days that followed". What occurred between Ida and her colleague was not only about a professional consultant taking care of certain issues for her client. It was more about two human beings sharing a moment together, a moment of knowledge sharing and high-quality connections. This master thesis is about this and other similar moments. It aims to understand what makes this moment special for both Ida and her client; how the relationship between them make this moment of knowledge sharing possible; and why high-quality connections are such a decisive and integral part of knowledge sharing practices in organizations.

1.1 Introduction

Knowledge is often argued to be a source of competitive advantage in today's highly dynamic business environment (Andreeva & Kianto, 2012; Grant, 1996; Schiuma, 2012; Teece, 2003). Research has shown that knowledge sharing is positively related to reduction in production costs, faster completion of new product development projects, team performance, firm innovation capabilities and firm performance (e.g. Arthur & Huntley, 2005; Collins & Smith, 2006; Cummings, 2004; Hansen, 2002; Lin, 2007; Mesmer-Magnus & DeChurch, 2009). To build a knowledge-based competitive advantage, it is necessary, but not sufficient for organizations to rely on staffing and training systems focused on selecting employees with specific knowledge, skills and abilities. Organizations also depend on individuals to collaborate, share, develop and combine knowledge in new ways to meet specialized demands and unique user requests (Hinds, Patterson & Pfeffer, 2001; Wang & Noe, 2010).

Although much is known about the antecedents and consequences of knowledge sharing (Foss, Husted & Michailova, 2010; Wang & Noe, 2010), less is known about the everyday knowledge sharing practices and activities that exist in organizations. Several calls have been made for more practice-based and qualitative research on knowledge sharing as it provides a rich and in-depth examination of the organizational and interpersonal context in which knowledge sharing occurs (Feldman & Orlikowski, 2011; Foss et al., 2010; Nicolini, Gherardi & Yanow, 2003; Perrin, 2012; Serenko, 2010; Wang & Noe, 2010). As Feldman and Orlikowski (2011) observe:

> In the boxes and arrows figures so prevalent in organization theory, the boxes are always labeled, while the arrows are often unadorned by any text, as if they speak for themselves. In practice theory the emphasis is on the arrows, on the relationships and performances that produce outcomes in the world. In other words, practice theory theorizes the arrows so as to understand how actions produce outcomes (Feldman & Orlikowski, 2011, p. 17).

This master thesis aims to adopt a practice lens to knowledge sharing, and the focus will be on the arrows. By *practice* we mean the "situated recurrent activities of human agents" (Orlikowski, 2002, p. 253), or simply "what people do" (Szulanski, 2003). Traditionally, knowledge has been viewed as something that can be captured, codified and transferred (Nonaka & Takeuchi, 1995; Steinmueller, 2000). However, in a practice-based view tacit and codified knowledge are seen as inseparable, and knowledge is understood as emergent,

developed through interactions between people, and through interactions between people and objects (Gherardi & Nicolini, 2000; Hargadon & Fanelli, 2002; Knorr Cetina 1999; Orlikowski, 2002; Nicolini et al., 2003; Tsoukas, 1996).

A review of the literature indicates that much research on knowledge sharing in organizations has been devoted to the question of how managers and practitioners can overcome various barriers to knowledge sharing (e.g. Ardichvili, Page & Wentling, 2003; McDermott & O'Dell, 2001; Riege, 2005; Rivera-Vazquez, Ortiz-Fournier & Rogelio Flores, 2011). Inspired by the tradition of positive organizational scholarship (POS) (Bakker & Schaufeli, 2008; Cameron, Dutton & Quinn, 2003; Cameron & Spreitzer, 2012; Luthans, 2002), our aim is to explore how knowledge sharing practices look like when at their *best*. POS focuses on "elevating processes and outcomes in organizations", or more generally, on "that which is positive, flourishing, and life-giving" (Cameron & Caza, 2004, p. 731). By learning more about the conditions and capabilities that create positively deviant behaviour in organizations it is believed that the focus of organizational research will shift from only repairing the negative things in work life to also building positive qualities (Seligman & Csikzentmihaly, 2000, p. 5). Examining positive phenomena is "a research frontier that holds promise and possibility" (Dutton & Ragins, 2007, p. 400), however much work remains to be done before the excitement and theoretical explorations turn into empirically explored and validated research (Linley, Garcea, Harrington, Trenier & Minhas, 2011). The present thesis will contribute to this need by empirically exploring how knowledge sharing practices look like when at their best.

Conceptualizing knowledge as a relational process that is continually enacted through people's everyday activity (Nicolini et al., 2003; Orlikowski, 2002) implies that the nature of relationships between people impedes or facilitates knowledge sharing. Within the POS movement, positive relationships at work have received much attention. A pioneer within this field is Jane Dutton. Dutton and Heaphy (2003) define a *connection* as "the dynamic, living tissue that exists between two people when there is some contact between them, involving mutual awareness and social interaction" (p. 264). The existence of some interaction means that individuals have affected one another in some way giving connections a temporal as well as an emotional dimension. Connections can occur as a result of a momentary encounter, and can also develop and change over a longer time period (Dutton & Heaphy, 2003). Thus, they exist and develop in

practice. Dutton and Heaphy (2003) further distinguish high-quality and low-quality connections between two individuals based on "whether the connective tissue between individuals is life-giving or life-depleting" (Dutton & Heaphy, 2003, p. 236). At their best, connections are "a generative source of enrichment, vitality, and learning that help individuals, groups and organizations grow, thrive, and flourish" (Ragins & Dutton, 2007, p. 3). In contrast, low-quality connections leave damage in their wake; they absorb all of the light in the system and give back nothing in return, and imposes a damaging emotional and psychological toll on individuals in work organizations (Dutton, 2003b, p. 15).

In our quest to understand how knowledge sharing practices look like when at their best, we believe that high-quality connections are the micro-contexts that provide the most fertile ground for knowledge sharing. As the prelude of this thesis illustrates, the high-quality connection between Ida and her client allowed knowledge to be absorbed faster, more completely and with the quality of the connection enhanced. Previous research has shown that people who find themselves being in a high-quality connection are, for instance, more likely to experience psychological safety, which in turn facilitates learning- and knowledge sharing behaviours (Carmeli, Brueller & Dutton, 2009; Edmondson, 1999). People who find themselves in connections of high quality also experience feelings of vitality and aliveness; they are more likely to feel positive arousal and a heightened sense of positive energy (Dutton & Heaphy, 2003; Quinn & Dutton, 2005). Such positive emotions widen people's scope of attention (Fredrickson & Losada, 2005), broaden people's momentary thought-action repertoires (Fredrickson, 2001), increase people's intention and willingness to share knowledge (Van den Hooff, Schouten & Simonovski, 2012), and trigger people's urge to explore and take in new information (Csikszentmihalhyi 1990; Izard, 1977; Ryan & Deci, 2000; Tomkins, 1962). These are all important factors in knowledge sharing. Thus, there is a high degree of evidence to suggest that high-quality connections are important for knowledge sharing. However, questions about interpersonal relationships still need to be answered (Cameron & Caza, 2004). For example, we know very little about how high-quality connections are actually created in practice (Carmeli et al., 2009, p. 93). The present thesis aims to fill this gap by adopting a practice-lens to explore what role high-quality connections play in knowledge sharing practices.

A relational take on knowledge and knowledge sharing is important and timely because work is becoming more interdependent (Kellogg, Orlikowski & Yates, 2006; Wageman, 1995), as well as more complex (e.g. work settings are becoming more virtual (cf. Raghuram, Garud, Wiesenfeld & Gupta, 2001; Wiesenfeld, Raghuram & Garud, 2001)). Many teams in organizations face situations where their members have not worked together before, represent different knowledge domains, are tasked with solving complex problems, and need to finish their work quickly because of time pressure (Dougherty, 2001; Edmondson & Nembhard, 2009; Hackman, 2002; Van Der Vegt & Bunderson, 2005). In these demanding conditions, the importance of high-quality relationships among organizational members is increasing, while the achievement of high-quality relationships is more challenging (Carmeli et al., 2009).

The chosen empirical context for this thesis is two high performing organizations located in Norway. We call them Noroil and Consultus. Noroil is a leading energy company, and Consultus is a global consulting company. As both companies are knowledge-intensive firms engaged in multidisciplinary knowledge work (cf. Alvesson, 2004), they are particularly appropriate as research sites in our study of knowledge sharing practices and high-quality connections. The nature of work in both organizations is very much about frequent human interaction: Employees in these organizations face unpredictable workdays, strict deadlines and complex analytical tasks, and such working conditions require rapid knowledge sharing between employees, as well as between employees and external parties such as clients.

1.2 Research question

In response to the lack of practice-based approaches to knowledge sharing at work, and the call for bringing human actors, their actions and interactions to the centre stage of organizational research the aim of this thesis will be to investigate the following questions:

In the context of knowledge-intensive firms: How do practices for knowledge sharing look like when at their best, and what role do high-quality connections play in such practices?

1.3 Outline of thesis

In order to answer the research question, existing literature on knowledge sharing and high-quality connections will be reviewed. Part II of the thesis contains the theoretical foundation for understanding knowledge as an ongoing, social process that is continually enacted through people's everyday activity. Here, we will also present the positive organizational scholarship tradition, and the theoretical foundation for why high-quality connections are a decisive part of knowledge sharing practices. In part III of this thesis we provide a presentation of the methodological framework where our research approach, research design and the case companies are presented. Part IV contains the analysis of the gathered data. We present five best practices of knowledge sharing, and discuss what role high-quality connections play in each of these practices. Finally, in part V of the thesis theoretical contributions, practical implications, limitations and suggestions for future research are discussed.

PART II: THEORETICAL BACKGROUND

> Knowledgeability or knowing-in-practice is continually enacted through people's everyday activity; it does not exist "out there" (incorporated in external objects, routines, or systems) or "in here" (inscribed in human brains, bodies, or communities). Rather, knowing is an ongoing social accomplishment, constituted and reconstituted in everyday practice.
>
> Orlikowski (2002, p. 252)

> In a high-quality connection knowledge is absorbed faster, more completely, and with the quality of the connection intact or enhanced.
>
> Dutton and Heaphy (2003, p. 273)

2.1 Introduction

In our attempt to understand more deeply how knowledge sharing practices look like when at their best, and what role high-quality connections play in such practices, we turned to organizational research to see what we already know about practice-based approaches to knowledge, and the dynamics between high-quality connections and knowledge sharing.

In the first part of this chapter we present our view on knowledge and review what has been written about practice-based approaches to knowledge. We argue that by adopting a practice-lens to knowledge sharing one can provide a rich and in-depth examination of the organizational and interpersonal context in which knowledge sharing occurs.

In the second part of this chapter we argue that by studying how knowledge sharing practices look like when at their *best*, one can learn more about how to build positive qualities that are vital for organizational performance. We draw on the positive organizational scholarship tradition, in which important progress has been made in understanding the capability-building aspects of organizational life, and we present our main reasons for focusing on positively deviant knowledge sharing behaviour.

In the third section of this chapter we argue that high-quality connections are the micro-contexts in which provide the most fertile ground for knowledge sharing. We first present the theory of high-quality connections, and then provide three theoretical explanations for why such connections provide the most fertile ground for knowledge sharing.

2.2 A practice-based approach to knowledge

The question of knowledge has long occupied philosophers and sociologists of science, and recently organizational researchers have become interested in this topic. One perspective on knowledge within organizational research suggests that "knowing is not a static embedded capability or stable disposition of actors, but rather an ongoing social accomplishment, constituted and reconstituted as actors engage the world in practice" (Orlikowski, 2002, p. 249). Knowing how to find oil, solve problems, or riding a bike are capabilities generated through action (Orlikowski, 2002 p. 253). These capabilities emerge from the "situated and ongoing interrelationships of context (time and place), activity stream, agency (intentions, actions), and structure (normative, authoritative, and interpretive)" (Orlikowski, 2002, p. 253). In the following sections we will first present the theoretical basis for viewing knowledge as an ongoing social accomplishment, constituted and reconstituted in practice. We specifically draw on Hargadon and Fanelli's (2002) *complimentary model of knowledge*. Second, we will review studies that have employed a practice-based perspective on knowledge in organizations.

2.2.1 A practice-based and complimentary perspective of knowledge

Traditionally, knowledge has been viewed as something that can be captured, codified and transferred (Nonaka & Takeuchi, 1995; Steinmueller, 2000). However, in the recent literature on organizational knowledge and learning an alternative "practice-based" view is proposed where tacit and codified knowledge are seen as inseparable, and knowledge is understood as emergent, developed through interactions between people and between people and objects (Bechky, 2003; Brown & Duguid, 1991, 2001; Ewenstein & Whyte, 2009; Hargadon & Bechky, 2006; Hargadon & Fanelli, 2002; Jakubik, 2011; Knorr Cetina, 1999; Nicolini et al., 2003; Orlikowski, 2002; Tsoukas, 1996; Wenger, 1998, 2000). Research within this tradition is often examining the historical, socio-material, relational and cultural context in which knowing-in-practice occurs.

The different approaches to understanding knowledge originate from the understanding of knowledge as either empirical or latent, not from seeing these two types of organizational knowledge as complementary and interdependent (Hargadon & Fanelli, 2002, p. 290). However, Hargadon and Fanelli's (2002)

have offered a practice-based complementary perspective of knowledge. They argue that organizational knowledge resides both in the latent knowledge; the schemas, goals and identities of individuals in organizations, *and* in the empirical knowledge; the concentration of artefacts and interactions that surround these individuals and comprise the organization. *Latent knowledge* represents individually held schemata of organizational members and this knowledge constitutes the precondition for novel action. In its ideal-typical form, this condition determines novel behaviour by providing the raw materials for such action (Hargadon & Fanelli, 2002, p. 294). While latent knowledge exists as the potential for novel action, *empirical knowledge* exists in action. Empirical knowledge encompasses the physical and social artifacts that surround individuals in organizations. In its ideal-typical form, this knowledge is the only material from which individually held schemata emerge (Hargadon & Fanelli, 2002, p. 294).

Note that it is impossible to link latent or empirical knowledge to action singly without recognizing the role played by the other. Latent knowledge comprises the schemata constructed and shaped from each individual's past experiences. Similarly, empirical knowledge can only be experienced through the lens of an individual's existing schema for that situation. Therefore, organizational knowledge must be understood only "as the result of an ongoing, circular interaction between individually held latent knowledge and the knowledge manifest in the surrounding environments" (Hargadon & Fanelli, 2002, p. 295). In this circular interaction latent knowledge is converted into empirical knowledge and vice versa. When this process unfolds in groups and organizations, knowledge is reproduced as it is made empirical in one person's actions and made latent again by another's experience of that action. It is through this interaction process knowledge becomes a social, and organizational phenomena (Hargadon & Fanelli, 2002, p. 295-299). In sum, it is necessary to consider the recursive relationship between latent and empirical qualities in the study of knowledge.

2.2.2 A review of practice-based studies of knowledge

A number of scholars within organizational studies have turned to practice-based approaches when studying knowledge production and sharing. In these studies attention is often drawn to the aesthetic and kinaesthetic forms of knowledge

within organizations: forms of knowledge that derive from the look, feel, smell, taste and sound of things and from physical interactions with them. For example, in their study of flute-makers at work, Cook and Yanow (1993) show how knowledge is developed through interactions as different flute-makers handle, work on, and pass on the flute. It is through their work, which involves judgment of the hand and eye as well as cognitive understandings, that practitioners learn the knowledge and skills associated with their community (Cook & Yanow, 1993; Yanow, 2000). From a practice-based perspective, rather than merely forming a symbolic context for work, the aesthetic and kinaesthetic forms of knowledge are seen as integral to that work (Ewenstein & Whyte, 2007; Gagliardi, 1996; Hancock, 2005; Strati, 1996, 1999).

Similarly, Whyte, Ewenstein, Hales and Tidd (2008) have investigated how visual practices are used to manage knowledge in project-based work. They found that visual representations help project teams to step between exploration (i.e. a process of finding, framing and structuring problems) and exploitation (i.e. a process of analysing alternatives and solving structured problems) within a project. This study suggests that managers need to pay more attention to visual representations, as they are not simply representations, but also tools that they can use in their project strategy. Whyte et al.'s (2008) focus on visual representations disrupts the tacit-codified dichotomy (or the dichotomy between latent and empirical knowledge) in the broad debate on knowledge and learning, and allows us to see a range of ways in which knowledge can be partially articulated and represented in project-based activities (Whyte et al., 2008).

Researchers taking a practice-based approach to knowledge have also contributed to our understanding of how knowledge workers collaborate and deal with knowledge differences. For instance, in a study of knowledge sharing across occupational communities, Bechky (2003) found that knowledge was shared through the transformation of occupational communities' situated understandings of their work. She linked misunderstandings between engineers, technicians and assemblers on a production floor to their work context: Communication problems arose due to language barriers, locus of practice, and different conceptualizations of the product. However, Bechky (2003) discovered that members of these communities overcame such problems by co-creating a common ground that transformed their understandings of the product and production process. She found that a machine worked as a tangible definition and as a helpful boundary

object between the occupational communities because it concretely depicted what the different communities did, making differences and boundaries clearer. However, the machine provided value to the occupational communities not because it clarified differences but because it helped them to identify the knowledge they collectively held about the machine.

Although some have found that one way of overcoming knowledge difficulties is to explicitly confront differences and dependencies across knowledge boundaries, others have found evidence for the opposite. Identifying and confronting differences takes time and it can lead to interpersonal conflicts. In a study of three cross-functional teams, Majchrzak, More and Faraj (2011) found that the teams were able to cogenerate solution *without* needing to identify, elaborate and confront differences. Instead all three teams engaged in five practices that minimized differences during the problem solving process. First, the team surfaced a broad range of observational fragments without discussing, critiquing, or querying each other for more details (*the practice of voicing fragments*). Second, the team quickly developed and then elaborated on a visual or verbal representation that encompassed many voiced fragments (*the practice of cocreating the scaffold*). Third, team members dialogued about the scaffold, raising questions about possible alternative solutions suggested by the scaffold, leading to reframing the scaffold to foster more creative solutions (*the practice of dialoguing around the scaffold*). Fourth, with an initial solution under consideration, the team dropped the scaffold as unnecessary and tried out the unfolding solution on external stakeholders (*the practice of moving the scaffold aside*). Fifth, activities for sustaining and monitoring engagement were created in a manner that minimized interpersonal differences and sustained cogeneration (*the practice of sustaining engagement*) (Majchrzak et al., 2011, p. 9). The authors suggest that these practices encouraged team creativity, helped the team to avoid interpersonal conflicts, fostered the rapid co-creation of intermediate scaffolds and fostered a personal responsibility within the team to translate personal knowledge into collective knowledge (Majchrzak et al., 2011).

In sum, researchers adopting a practice-based perspective on knowledge sharing have provided new and useful insights into how knowledge is shared at work. In this section we have reviewed practice-based studies that reveal, for example, how cross-functional teams overcome knowledge differences and how visual representations and boundary objects help project teams better share

knowledge. All in all, the renewed interest in practice theory and the conceptualization of knowledge from a practice perspective (Jakubik, 2011) serve an important function in improving explanations of the micro-dynamics of knowledge work in organizations. However, researchers have argued that too little attention has been devoted to the micro-foundations of knowledge sharing (Foss, Husted & Michailova, 2010)[1]. Several calls have been made for more practice-based and qualitative research on knowledge sharing as it provides a rich and in-depth examination of the organizational and interpersonal context in which knowledge sharing occurs (Feldman & Orlikowski, 2011; Nicolini et al., 2003; Perrin, 2012; Serenko, 2010; Wang & Noe, 2010). *The present thesis aims to contribute to this "practice-turn" within organizational research by studying what people do when they share knowledge.*

2.3 The positive organizational scholarship movement

Traditionally, much organizational research has focused on the negative aspects of work, addressing mainly the question of how what is wrong can be fixed (Ashforth & Humphrey, 1995; Bakker, Schaufeli, Leiter & Taris, 2008; Taris, Cox & Tisserand, 2008)[2]. With regard to the knowledge sharing literature, much research has focused on how practitioners can overcome various barriers to knowledge sharing (e.g. Ardichvili et al., 2003; McDermott & O'Dell, 2001; Riege, 2005; Rivera-Vazquez et al., 2011). However, there is at present a movement towards an increased focus on positive and capability-building aspects of organizations (e.g. Bakker & Schaufeli, 2008; Cameron et al., 2003; Cameron & Spreitzer, 2012; Carlsen, Clegg & Gjersvik, 2012; Luthans, 2002). This movement is often referred to as *positive organizational scholarship* (POS). POS focuses on "elevating processes and outcomes in organizations", or more generally, on "that which is positive, flourishing, and life-giving (Cameron & Caza, 2004, p. 731). Researchers within the POS movement are not denying the

[1] In a review of the knowledge sharing literature, Foss, Husted and Michailova (2010) found that "it is potentially problematic that out of the 100 studies we reviewed, by far most of them, 81, are concerned with organizational level knowledge sharing outcomes without paying serious attention to the micro-foundations of these outcomes. However, if no specific assumptions are made about organizational members, it is difficult to meaningfully theorize their interaction, including how such interaction aggregates to organization-level knowledge sharing outcomes. Given this, knowledge sharing research can be characterized as devoting too little attention to building micro-foundations in the form of making behavioural assumptions and building theoretical accounts of mechanisms" (p.465).

[2]Schaufeli and Bakker (2004, p. 293) report that negative work-related outcomes outnumber positive outcomes by a ratio of 15 to 1 in research articles published in the *Journal of Occupational Health Psychology* between 1996 and 2004. Taris et al. (2008) report similar findings from the *Work & Stress* journal. This is in accordance with the general trend in psychology: According to Myers (2000), negative emotions outnumber positive emotions by a ratio of 14 to 1 in research published in *Psychological Abstracts*.

negative aspects of work experience. Instead, they aim "to counterbalance the current focus on the negative by giving equal attention to those factors and processes that produce excellence, thriving and human flourishing within organizations" (Martela, 2012, p. 34). By learning more about the conditions and capabilities that create positively deviant behaviour in organizations it is believed that the focus will shift from only repairing the negative things in life to also building positive qualities (Seligman & Csikzentmihaly, 2000, p. 5). However researchers within POS are looking for more empirical work on its primary topics, and much work remains to be done before the excitement and theoretical explorations of positive phenomena turn into empirically explored and validated research (Linley et al., 2011). Therefore there is a constant call for "studies of affirmative, uplifting, and elevating processes and outcomes" (Cameron & Caza, 2004). *The present thesis will contribute to this need by empirically exploring how knowledge sharing practices look like when at their best.*

2.4 High-quality connections

Conceptualizing knowledge as a relational process that is continually enacted through people's everyday activity (Nicolini et al., 2003; Orlikowski, 2002) implies that the nature of relationships between people impedes or facilitates knowledge sharing. In our attempt to understand how knowledge sharing practices look like when at their best, we believe that high-quality connections (Dutton & Heaphy, 2003) are the micro-contexts in which provide the most fertile ground for knowledge sharing in organizations. In the following sections we will first present Dutton and Heaphy's theory of high-quality connections. Second, we will present three theoretical explanations for how high-quality connections influence knowledge sharing behaviours.

2.4.1 Defining high-quality connections

In recent years, much organizational research has been devoted to answer questions of how positive relationships at work affect other organizational outcomes. This movement was arguable set in motion by the influential article on high-quality connections by Dutton and Heaphy (2003). Dutton and Heaphy (2003) define a *connection* as "the dynamic, living tissue that exists between two people when there is some contact between them, involving mutual awareness and

social interaction" (p. 264). The existence of some interaction means that individuals have affected one another in some way giving connections a temporal as well as an emotional dimension. Connections can occur as a result of a momentary encounter, and can also develop and change over a longer time period (Dutton & Heaphy, 2003). They exist and develop in practice.

Dutton and Heaphy (2003) define the quality of connections between two individuals based on "whether the connective tissue between individuals is life-giving or life-depleting" (Dutton & Heaphy, 2003, p. 236). At their best, connections are "a generative source of enrichment, vitality, and learning that helps individuals, groups and organizations grow, thrive, and flourish" (Ragins & Dutton, 2007, p. 3). In contrast, low-quality connections leave damage in their wake; they absorb all of the light in the system and give back nothing in return, and imposes a damaging emotional and psychological toll on individuals in work organizations (Dutton, 2003b, p. 15).

Dutton and Heaphy (2003, p. 266) argue that there are three defining characteristics of a high-quality connection. First, high-quality connections are indicated by a *higher emotional carrying capacity*. Higher emotional carrying capacity of a connection is evidenced by both the expression of more emotions, and the expression of both positive and negative emotions. Connections of higher quality "have the capacity to withstand the expression of more absolute emotion and more emotion of varying kinds" (Dutton & Heaphy, 2003, p 266). People know they are in a high-quality connection by the safety they feel in displaying different emotions. Second, high-quality connections are indicated by *tensility*. Tensility is the "capacity of the connection to bend and withstand strain and to function in a variety of circumstances". It is the feature of the connection that indicates its resilience or the capacity to bounce back after setbacks. A connection of high quality will respond differently to conflict (due to the tensility) compared to a connection of low quality. The tensility allows the connection to alter form, while maintaining strength, to accommodate conflicts and tensions in the joint circumstances of the connection (Dutton & Heaphy, 2003, p 266). Third, high-quality connections are indicated by a *higher degree of connectivity*. Degree of connectivity is a measure of a relationship's "generativity and openness to new ideas and influence, and its ability to deflect behaviors that that will shut down generative processes" (Dutton & Heaphy, 2003, p. 266). Connections with a high degree of connectivity display an atmosphere of buoyancy that creates expansive

emotional spaces, which in turn open up possibilities for action and creativity (Dutton & Heaphy, 2003, p. 266).

Furthermore, Dutton and Heaphy (2003) argue that people in high-quality relations have three essential subjective experiences: First, high-quality connections are marked by *feelings of vitality and aliveness*. People in high-quality connections are more likely to feel positive arousal and a heightened sense of positive energy (Quinn & Dutton, 2005). Second, being in a high-quality connection is also felt though a heightened sense of *positive regard.* People in high-quality connections experience a feeling of being known or being loved. This sense can be instantaneous. It does not apply romantic attachment, nor does it imply a relationship of long duration. This feeling can rather be described as a state of pure being in which "worries, vanities and desires vanish" (Dutton & Heaphy, 2003, p. 267). Third, the subjective experience of being in a high-qaulity connection is marked by *felt mutuality*. Mutuality captures the sense that both people in a connection are engaged and actively participating (Dutton & Heaphy, 2003, p. 267). While positive regard captures a "momentary feeling of love at rest, mutuality captures the feeling of potential movement in the connection born from mutual vulnerability and mutual responsiveness" (Dutton & Heaphy, 2003, p. 267). All three subjective experiences are important barometers of the quality of connection between people.

According to Dutton and Heaphy (2003, p. 275-276) high-quality connections potentially lead to a number of positive outcomes. For instance, high-quality connections can enhance the capacity to cooperate within and across units, facilitate effective coordination between interdependent parts of an organization, strengthen attachment to work organizations, facilitate the transmission of a purpose, encourage dialogue and learning, and enhance an organization's capacity to adapt and change (Dutton, 2003a, 2003b). In addition, high-quality connections affect learning. Dutton and Heaphy (2003, p. 273) argue that there are two theoretical explanations for how high-quality connections affect learning. First, in a high-quality connection knowledge is absorbed faster, more completely, and with the quality of the connection intact or enhanced. Second, knowledge is constituted in interaction between people with high-quality connections being more generative, heedful, and flexible (Dutton & Heaphy, 2003). An empirical study by Carmeli et al. (2009) supports these arguments. Carmeli et al. (2009) discovered that among university students both the capacities built into high-

quality relationships and people's subjective experiences of being in such relationships are positively associated with psychological safety, which in turn predicts learning behaviours. In sum, Dutton and Heaphy (2003) conclude, "if organizations can create a fertile ground for building high-quality connections, employees may be able to (...) engage each other more fully, be more vulnerable in the process of learning, and experience more interpersonal valuing through positive regard, all of which cultivate positive meaning about being an organizational member" (Dutton & Heaphy, 2003, p. 276).

2.4.2 The power of high-quality connections in knowledge sharing

Having presented the main aspects in Dutton and Heaphy's theory of high-quality connections, we will now present three theoretical explanations for why we believe that high-quality connections are the micro-contexts that provide the most fertile ground for knowledge sharing.

First, people who find themselves in high-quality relationships experience feelings of vitality and aliveness; they are more likely to feel positive arousal and a heightened sense of positive energy (Dutton & Heaphy, 2003; Quinn & Dutton, 2005). Research has shown that such positive emotions widen people's scope of attention (Fredrickson & Losada, 2005), broaden people's momentary thought-action repertoires (Fredrickson, 2001), and trigger the urge to explore and take in new information and experiences (Csikszentmihalhyi, 1990; Izard, 1977; Ryan & Deci, 2000; Tomkins, 1962). Positive emotions (such as empathy) have also been found to increase people's intention, willingness and intrinsic motivation to share knowledge (Van den Hooff et al., 2012). In sum, the experience of positive emotions has beneficial outcomes related to intellectual capacity and the ability to explore and learn. As people in high-quality connections experience positive emotions, one can argue that such connections play a decisive role in knowledge sharing practices.

Second, people who find themselves in high-quality connections experience that there is a high degree of generativity and openness to new ideas and influences in their relationships (degree of connectivity). They experience that their relationships have capacity to withstand the expression of more absolute emotions (emotional carrying capacity) and to bend and withstand strain (tensility) (Dutton & Heaphy, 2003). Scholars have found that organizations whose members accept and appreciate each other, and have open disagreements

about ideas, viewpoints, experiences and knowledge, are more creative and innovative (Isaksen & Ekvall, 2010). These findings suggest that when people find themselves in work relationships characterized by openness and tensility they become more creative and willing to share knowledge. As people in high-quality connections experience tensility and openness, one can argue that such connections play a decisive role in knowledge sharing practices.

Third, people who find themselves in high-quality relationships experience a feeling of being known, or loved, and a heightened sense of positive regard. Furthermore, the experience being in a high-quality connection is marked by felt mutuality, meaning that both people in a high-quality connection are engaged and actively participating, and that there is a presence of mutual empathy between them (Dutton & Heaphy, 2003). Research on care in knowledge creation shows that when people demonstrate care in work relationships they create an enabling context, which facilitates the creation of new knowledge (Von Krogh, 1998; Von Krogh, Ichijo, & Nonaka, 2000). Von Krogh (1998) argues that since knowledge sharing is a social, interactive process, it is also highly fragile: "Each individual (in a knowledge sharing situation) is faced with the challenge of justifying his true beliefs in the presence of others and precisely this process of justification makes knowledge creation a highly fragile process" (Von Krogh, 1998, p, 135). Care is one key enabling condition for the knowledge sharing and creation process as it "speeds up the communication process, enables organization members to share their personal knowledge and to discuss their ideas and concerns freely" (Von Krogh, 1998, p. 136). Von Krogh (1998) shows that when there is care in organizational relationships there will be mutual trust, active empathy, access to help among team members, lenient judgment towards participants in the team, and courage. In such a situation, "the individual will bestow knowledge on others as well as receive active help from others (others bestowing knowledge on him)" (Von Krogh, 1998, p. 140-141). The process of mutual bestowing provides fertile ground for a distinct process of creating social knowledge in a team, the process *indwelling,* which means to go from "looking at" something to "looking with" someone (Von Krogh, 1998). As high-quality connections include mutual empathy, feelings of being known and loved, and a heightened sense of positive regard, care is also present in such connections. Having established that care is one key enabling condition in knowledge sharing, the important role of high-quality connections in knowledge sharing practices becomes even more evident.

In sum, the capacities of high-quality connections (e.g. tensility, emotional carrying capacity and degree of connectivity) and the subjective experiences of being in such connections (e.g. feelings of vitality and aliveness, positive regard and felt mutuality) are important enablers of knowledge sharing. Thus, it is reasonable to believe that high-quality connections are the forms of ties that provide the most fertile ground for acquiring, developing and experimenting with new knowledge. Although studying high-quality connections at work is "a research frontier that holds promise and possibility" (Dutton & Ragins, 2007, p. 400), important questions about such relationships still need to be answered (Cameron & Caza, 2004). For example, we still know very little about how high-quality relationships are created in organizations (Carmeli et al., 2009, p. 93). There is also a need for more research exploring how high-quality relationships create a relational foundation for other capabilities (e.g. knowledge sharing) that are central to generating positive change and enhancing performance of organizations (Carmeli et al., 2009, p. 93). *The present thesis aims to fill these gaps: By adopting a practice-lens on high-quality connections we will uncover how high-quality connections are created in organizations. By exploring what role high-quality connections play in knowledge sharing practices we will also contribute with new insight into how high-quality relationships create a relational foundation for organizational capabilities that are central to generate performance.*

PART III: METHODOLOGY

3.1 Introduction

Organizational researchers attempting to start an empirical inquiry face an inescapable choice with regard to ontology, epistemology, and the nature of inquiry underlying their research. Whether one makes the choice implicitly or explicitly, these basic assumptions influence what kind of methodological approaches are appropriate, what kind of phenomena one is able to observe and capture, and what kind of results one can expect to find. In this chapter we will first present our methodological approach, which is the principle of abductive inquiry. Second, we will present the research design and what have been the primary sources of data in this study. Third, we will provide a short presentation of the two case organizations and the informants. Fourth, we will discuss what techniques we have used to code and analyze the data. Finally, we discuss some ethical considerations.

3.2 Abductive inquiry

When choosing a method design, organizational researchers face the choice between inductive and deductive forms of reasoning. Deductive modes of reasoning involves "testing theory against practice using a positivist epistemology", while inductive modes involve "developing theory from practice using an interpretive epistemology" (Hatch & Cunliffe, 2006). Usually, but not necessarily, deductive reasoning is connected to quantitative research where the aim is to test pre-formed hypotheses against a data set, while inductive reasoning is often used in qualitative research where the aim is to draw theory from rich and pure data. Thus, ideally, induction starts from theory-free facts, while deduction starts from fact-free theory (Alvesson & Sköldberg, 2009, p. 4). However, both induction and deduction have problems as forms of inference suitable for organizational research. Deductive reasoning does not provide selection criteria for choosing between alternative explanations, and thus in effect "sidesteps the question of alternative explanations and focuses instead on testing a single theory for empirical adequacy" (Ketokivi & Mantere, 2010, p. 318). Inductive reasoning, on the other hand, faces an "unavoidable logical gap between empirical data and theoretical generalizations" (Ketokivi & Mantere, 2010, p. 316). Researchers

engaged in inductive reasoning always need something more than pure induction in order to interpret the data.

Having found both deductive and inductive reasoning as lacking, Charles S. Peirce (1903/1998a) argued that there is need for a third form of reasoning to complement these two. This he called abductive reasoning. Abductive reasoning is "the process of forming an explanatory hypothesis" (Peirce, 1998a [1903], p. 216), and has sometimes been called inference to the best explanation (Josephson & Josephson, 1994, p. 5; Marcio, 2001, p. 103). In Peirce's classic formulation of abduction, a surprising fact is observed and this initiates a search for a hypothesis that would best explain the surprising fact (Peirce, 1998b [1903], p. 231). Thus, abductive inquiry starts with surprise, wonder, or doubt that questions one's current way of explaining reality. This surprise or wonder initiates a process where the inquirer uses imagination to come up with new ways of seeing matters that is consistent with the larger context of his or her other experiences and ways of seeing the world, as well as explaining the surprising fact. Abduction can thus be viewed as a creative process; it is about "putting together what we had never before dreamed of putting together" (Peirce, 1998c [1903], p. 227). Abduction is therefore also a learning process – and arguably the only form of inference that can explain how new knowledge comes into being (cf. Prawat, 1999).

The ways of reasoning found in medical diagnostics can be used as an example of abductive reasoning: A physician observes certain symptoms, and compares them with his previous knowledge. He perhaps consults some books or colleagues and takes further tests to arrive at a diagnosis. The result - the diagnosis - is thus "neither a logical necessity of the premises, nor a pure induction from the symptoms, and might not always be accurate but it nevertheless gathers together the best possible educated guess of the physician" (Alvesson & Sköldberg, 2009, p. 5). In order to arrive at this understanding, a constant movement back and forth between theory and empirical data is necessary (Wodak, 2004, p. 200). The result of abductive reasoning is not the final truth about the phenomenon, but a tentative hypothesis that nevertheless would best explain the evidence and has the most potential to provide practical results (Alvesson & Sköldberg, 2009).

In sum, in abductive inquiry the researcher starts with a situation in need of explanation: Given one's theoretical background and current world view, the data represents something surprising, novel or interesting; something one wants to

understand better. Through an iterative process of abduction in which one analyzes the existing data and perhaps collects some new data and makes use of different theoretical perspectives, one aims to reach an appropriate explanation of the puzzling situation. The aim is to reach a situation in which the data to be explained, the theories adopted and one's evolved worldview form a "resolved unified situation" (Dewey, Hickman & Alexander, 1998, p. 174); in other words a wholeness in which one's new way of seeing the matter is able to explain what before represented a mystery (cf. Alvesson & Kärreman, 2007).

This means that in abductive research, the role of the researcher is active. In the abductive process the data itself and the pre-understanding of the researcher are in constant interplay. However, the researchers are as much "cultured beings" as the people they study, meaning that the data the researcher draws upon is always already interpreted in one-way or another (Alvesson & Sköldberg, 2009). Alvesson and Sköldberg (2009, p. 6) claim that we never see single sense-data, but always interpreted data, data that are placed in a certain frame of reference". In a way, abduction is therefore about evolving the researcher's way of perceiving - his or hers perceptual schemes - to accommodate for novel experiences that disturbed these schemes by seemingly not fitting into them. Actual inquiry never starts from a neutral tabula rasa position, but it takes place through the actions of the inquirer that are shaped by his or her particular worldview. This master thesis aims to follow the logic of abductive inquiry when examining how knowledge sharing practices look like when at their best, and what role high-quality connections play in such practices.

3.3 Research design and data collection

Above we presented the methodological foundation for our research approach. Let us now turn to a discussion of how the empirical research process of this master thesis proceeded in practice. A commitment to the practice lens required us to combine selected observations with semi-structured and open-ended interviews (Feldman & Orlikowski 2011, p. 18). We chose to use two different methods because it allowed for a between-method triangulation that would increase the quality and reliability of the data gathering process (Denzin, 1978; Jick, 1979). The combination of interviews and selected observations offers fruitful synergies. Selected observations can make the researcher more informed about the empirical

context, and which questions that are relevant to ask in the interviews, whereas the interviews offer opportunities to ask about the things that one has observed and to validate one's feelings about what one has seen (Martela, 2012, p. 109).

Unfortunately, we were not able to observe our informants in action at work due to the confidential nature of their work tasks. However, our interviews took place at the offices of our informants, either at the company headquarter, or at their project sites. This allowed us to see the physical surroundings of our informants, and observe informants as they interacted with colleagues or clients in informal settings. The observations gave us information about the empirical context, and a notion of what questions that would be relevant to ask in the interviews. The interviews were designed to shed light on collaboration, work relationships and knowledge sharing practices in oil exploration. By asking a few open-ended questions, encouraging exemplification, and dwelling on sources of genuine engagement (see Table 1 below), we have tried to facilitate co-construction of narratives as we believe that reflective practitioners are valuable co-creators of theory (Carlsen, Klev & Von Krogh, 2004; Holstein & Gubrium, 1995). In total we conducted 19 interviews, 10 in Noroil and 9 in Consultus. On average, the interviews lasted for about 1-1,5 hours. The informants were open, reflective and willing to share their stories.

Our method design consists of three phases (see Table 2 below). In the first phase, we conducted observations and 10 semi-structured interviews with employees working in oil exploration in Noroil (for interview guide see Appendix 1). Five of these interviews in Noroil were conducted in collaboration with our fellow students Emily Moren Aanes and Dragana Trifunovic. The preliminary findings that emerged from these interviews gave us an opportunity to adjust the interview guide and focus on some specific themes. As we discussed above, this constant movement back and forth between theory and empirical data is necessary in abductive inquiry. In the second phase, we conducted observations and 9 semi-structured interviews with management consultants in Consultus (for interview guide see Appendix 2). After conducting phase 1 and phase 2 we wanted to take a further step in validating our findings. As discussed, we believe that reflective practitioners are valuable co-creators of theory (Carlsen, Klev & Von Krogh, 2004, p. 2). In the third phase, we therefore conducted two follow-up interviews, one with an informant in Noroil, and one with an informant in Consultus.

TABLE 1. TYPES OF QUESTION ASKED IN INTERVIEWS

Question themes	Specifics
Q1: Background of interviewees	Questions about the educational, professional and personal backgrounds of interviewees, e.g., Could we start with you giving a brief biography of you professional background. This would be a warm up phase with little direction given. Typically, follow up questions would centre on motives for choice of work and sources of engagement.
Q2: Successful projects and breakthroughs	Open-ended questions about specific projects or events that organization members see as having been especially successful. Typically, follow-up questions would centre on turning points: e.g., Can you think of an episode where, together with others made the project move forward? What did you do in this episode?
Q3: Relationships at work	Questions about the collaboration in the successful projects. E.g., Think about the same successful project: Can you tell us more about the relations to the other colleagues involved in the project? Typically, follow-up questions would be more directive and comparative; e.g., What do you think is the difference between a colleague you collaborate well with, and a colleague you collaborate especially well with? What is the difference between a good team, and an extraordinary team?
Q4: Sources of deep engagement and meaning	Questions about aspects of work and episodes from work that provide employees with a sense of fulfilment, pleasure, and satisfaction; e.g., Can you think of a time that you felt alive and engaged at work? Typically, follow up questions would centre on context of the episode, e.g. physical setting and tools, team composition, relationships between team members etc.
Q5: Imagined and desired futures	Questions about imagined futures, and ideal scenarios; e.g., If you had all the power, what would you change in order to increase collaboration in your organization? Imagine that a miracle takes place; all your dreams of what this firm could become are suddenly fulfilled. What does it look like?
Q6: Reflections on patterns	A reflective session typically starting with brief presentations of preliminary interpretations and patterns from the interview just conducted and previous interviews with the interviewee or across interviews, followed by questions and discussions about their plausibility and alternative interpretations. Such reflective sessions could also be done as separate conversations.

TABLE 2. RESEARCH DESIGN

Phase 1:	Selected observations and interviews with 10 employees in Noroil.
Phase 2:	Selected observations and interviews with 9 employees in Consultus.
Phase 3:	Follow-up interviews with 2 employees, one from each case organization.

3.4 Case organizations

Given our willingness to dig into the relational dimensions of knowledge sharing in organizations, we think of Noroil and Consultus as good sites for our empirical research. Both companies are knowledge-intensive firms and engaged in multidisciplinary knowledge work (cf. Alvesson, 2004). According to Alvesson (2004) work and organizations that are knowledge-intensive "revolve around the use of intellectual and analytical tasks, and are typically seen as requiring an extensive theoretical education and experience to be carried out successfully" (p. 1). Jobs in such firms are not highly routine and call for a high degree of creativity and adaptation to specific circumstances. Examples of knowledge-intensive firms include management and IT consultancies, and high tech and R&D based companies (Alvesson, 2004, p. 1).

Noroil is a leading energy company with operations in multple countries. Building on decades of experience from oil and gas production on the Norwegian continental shelf, this international company is committed to accommodating the world's energy needs, applying technology and creating innovative business solutions. Noroil is headquartered in Norway with approximately 20,000 employees worldwide. The participants in our study are working within oil exploration. Work within oil exploration is very much about frequent human interaction due to the multidisciplinary nature of such work (Carlsen et al., 2012). Hence, explorers are well suited as participants when the aim is to study the role of high-quality connections in knowledge sharing.

Consultus is a global management consulting, technology services and outsourcing company. Consultus collaborates with its clients to help them become high-performance businesses and governments. In Norway the company has approximately 1000 employees. The participants in our study work within management consulting, and the nature of work within management consulting can also be characterized as multidisciplinary and knowledge-intensive. Hence, both these firms comply with Alvesson's (2004) criteria and are, as such, appropriate research sites in our study.

3.5 Participants

The participants in this study consisted of 10 informants from Noroil, and 9 informants from Consultus. In Noroil, two of the informants were female and

eight were male. In Consultus, one of the informants was female and eight were male. Unfortunately we did not succeed in getting equal representation of males and female. The informants had different backgrounds and functions in the organizations. For instance, in Noroil, some were educated within geology and sedimentology, whereas others had educational backgrounds in geophysics and petroleum technology. All of them worked within oil exploration, some in the exploration team, others in the appraisal team. In Consultus, we interviewed management consultants that had different educational backgrounds within political science, economics, mathematics and psychology. The informants ranged in age from 30 to 50 years.

3.6 Data analysis

Because of the explorative, theory-generating nature of this master thesis, the guiding principle in the choice of analyzing techniques was to find out how to get the most out of the data. Accordingly, our main methodology for analyzing the interviews was grounded theorizing (Glaser & Strauss, 1967; Suddaby, 2006), and particularly the more constructivist brand of grounded theorizing (Strauss & Corbin, 1998; Van Maanen, 1979). The techniques provided by this approach were chosen because it has been widely adopted within social sciences and organizational research (Bryant & Charmaz, 2007; Gephart, 2004), and they offer a reliable and systematic way of moving from particulars of the data into more abstract constructs. Grounded theorizing attempts to stay true to the reality of those researched, and allows the informants to speak in their own voices (Van Maanen, 1979), and is especially suitable for research that aims to "elicit fresh understandings about the patterned relationship between social actors" (Glaser & Strauss, 1967, p. 1) and in situations where the "researchers have an interesting phenomenon without explanation and from which they seek to "discover theory from data"" (Suddaby, 2006, p. 636). Both of these conditions describe the present research well. Grounded theorizing is also very much compatible with the methodological principle of abductive inquiry outlined in the beginning of this chapter. In accordance with our interpretation of abduction, grounded theorizing is about "moving between induction and deduction while practicing the constant comparative method" (Suddaby, 2006, p. 639). It is about imaginative discovery,

but discovery that is grounded in the data and the existing theoretical frameworks (Martela, 2012, p. 122).

Of the various interpretations of the core of grounded theorizing, we have followed those offered by Van Maanen (1979) and Strauss and Corbin (1998). In the coding process we applied Strauss and Corbin's (1998) principles of open-, axial-, and selective coding. *Open coding* is the part of the analysis concerned with identifying, naming, categorizing and describing phenomena found in the text. In this phase, each line, sentence and paragraph is read in search of answers to questions such as: "What is this about? What is at issue here? What phenomenon is being addressed? What persons or actors are involved, and what roles do they play? What reasons are given? What methods are used?" (Strauss & Corbin, 1998, p. 143). *Axial coding* is that part of the analysis concerned with examining each category in terms of the context in which it occurs, any conditions which it may have caused, any actions and interactional strategies by which it is managed or handled, and the consequences which arise from the category (Strauss & Corbin, 1998; Fisher, 2010, p. 422). By examining these factors, it becomes possible to link categories and to verify the linkages by testing them against the data. It enables the researcher to "ground" their theory in the data. Finally, *selective coding* involves the integration of the categorised material into a theory, which accounts for the phenomenon being researched. This integration is done by selecting one of the categories as the focus of interest and making it the "core category" around which the rest of the categories are organized. This creates a theoretical framework, which is validated against the data (Strauss & Corbin, 1998, p. 143).

As previously discussed, abductive research conveys the researcher as active. In the data collection process the researchers will always be interpreting in one way or another. In this way, the collected data will be both a social construction of the researcher along with the socially constructed views of those who are being studied. Van Maanen (1979) divided these two types of constructions into first- and second-order concepts. First-order concepts are the artefacts presented by the subject of the research – these are taken as *facts*. Second-order concepts are the constructions of the researcher – these lead to the *theories* the researcher develops to explain the phenomena under study. To put this simply: first-order concepts are interpretations, and second-order concepts are "interpretations of interpretations" (Van Maanen, 1979, p. 540-541).

After transcribing the interviews with employees in Noroil, we coded the data into first-order concepts (see Appendix 3). In our analysis of this data we looked for patterns and regularities that our informants reported when describing successful projects, stories of successful knowledge sharing, and moments of high-quality connections. After coding the data from Noroil into first-order concepts, we moved back to theory in order to make further sense of our concepts. After transcribing the interviews with employees in Consultus, we conducted a similar coding process where first-order concepts were identified (see Appendix 3). We presented the first-order concepts to informants in both organizations, so that they could elaborate on the concepts and validate that we had accurately depicted their activities. Then we examined the first-order concepts across the two case organizations and were surprised to find how similar they were. From the first-order concepts we were able to abstract five second-order concepts, or as we call them, practices (Appendix 3).

Throughout the coding process we have relied on multiple inquirerers, or *the principle of collaborative resources*, which means to involve different stakeholders as resources in interpreting and understanding the research material (Fisher, 2010, p. 276). The collaborative group consisted of a senior specialist from Noroil, Arne Carlsen (thesis supervisor and professor at BI Norwegian Business School), Tord Fagerheim Mortensen (researcher at SINTEF), Dragana Trifunovic (fellow student), and Emily Moren Aanes (fellow student). Together with this group we have discussed the content of the transcribed interviews, our observations, and the initial categories that emerged during the coding process. We argue that applying the principle of collaborative resources has contributed in validating our findings (Fisher, 2010, p. 276). However, it should be noted that the collaborative group primarily was used in the open- and axial coding phase.

3.7 Ethical considerations

Having presented our methodological approach, and how the empirical research process of this master thesis proceeded in practice, we will now present some ethical considerations. This project was submitted to the Norwegian Social Sciences Data Services (NSD). Participation in the study was voluntary. All participants were ensured confidentiality of any gathered information. Prior to the interviews, the subjects signed a consent form, which ensured anonymity and their

right to withdraw at any time without stating a reason. The audiotaped records were deleted after they were transcribed. The transcription of interviews will remain within the department, and will not be used for other purposes than stated in the consent form. The case organizations and informants were given new names, and personal information has been altered.

PART IV: FINDINGS

4.1 Introduction

The empirical analysis of the cases reveals five best practices of knowledge sharing: (1) *mobilizing engagement*, (2) *interacting offstage*, (3) *making it tangible*, (4) *sharing space*, and (5) *help seeking/help giving*. The five practices are explicated in Table 3 (Appendix 4 includes select quotes). We make no claim that this is an exhaustive list, neither that the practices are mutually exclusive. The five practices should rather be seen as complementary; indeed, they are often interwoven, so that a typical story of people sharing knowledge will often include several practices at the same time.

TABLE 3. FIVE BEST PRACTICES OF KNOWLEDGE SHARING

Practice	Definition
Mobilizing engagement	The practice of mobilizing engagement means to assemble a team on a quest. A quest, or mission, is limited in time and includes strict deadlines and common goals. The practice of mobilizing engagement implies that something is at stake. It means that a team will have to do more work at a shorter period of time than usual in order complete the mission. This leads to a sense of urgency and mutual dependency in the team. Further, team members must share knowledge to a larger extent, and collaborate more intensively.
Interacting offstage	The practice of interacting offstage involves spending time together with clients or colleagues in informal arenas. Such informal arenas can be social events outside office hours, conversations in the hallway or gatherings around the coffee machine. When interacting offstage people meet face-to-face, gain knowledge about "who knows what", share positive emotions and get to know each other more personally. This makes knowledge sharing easier. For instance, it is easier to send an email and ask for help if you have already met the person. Personal relationships also improve the use of knowledge management systems, because such relationships allow unwritten contextual and confidential knowledge to be shared. When interacting in informal arenas people also escape from formal role expectations. This allows them to share ideas and knowledge more freely.
Making it tangible	The practice of making it tangible is a work form that transforms abstract concepts and incomplete ideas into visual representations or physical objects. Visual representations and physical objects include drawings, sketches, as well as photographs, maps, physical models and visualizations on the computer screen. The practice of making it tangible is about testing and improving half-worked ideas on an early stage of development. When intangible and individually held knowledge is made tangible it becomes accessible for others. Additionally, visual representations and physical objects function as common references that allow knowledge workers to ground their divergent understandings in

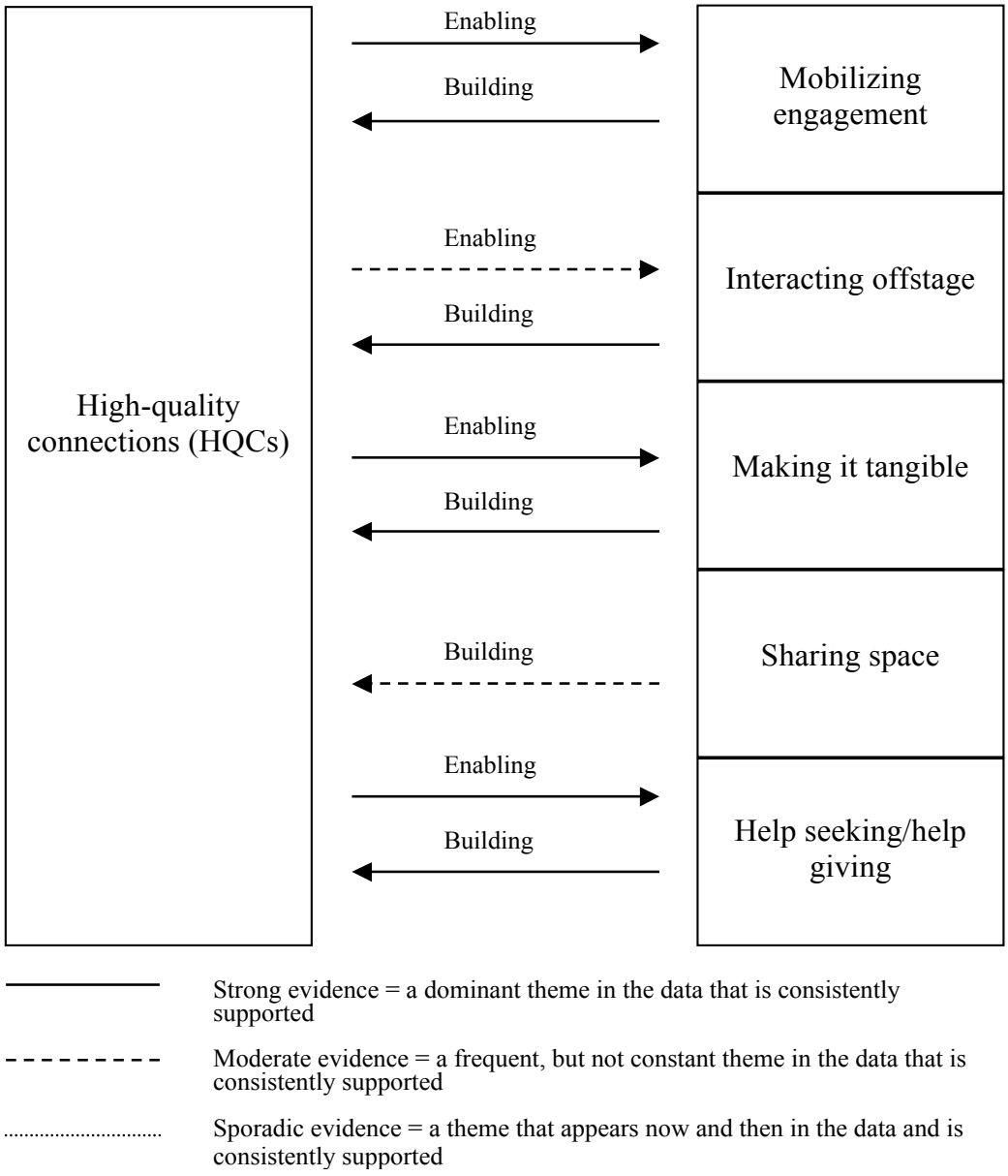
	the physical world. In this way, the practice of making it tangible makes knowledge sharing between different knowledge domains easier.
Sharing space	The practice of sharing space is a work form that includes frequent face-to-face interactions, spending time in the office, and sitting next to one another while working. Whereas virtual communication puts restrictions on communication, the practice of sharing space implies proximity, and enables people to use gestures, words and physical resources when communicating. Sharing space thus allows people to share knowledge verbally, non-verbally (gesticulating) and visually (sketching, using objects). The practice of sharing space can also create a symbolic perception of equality and commitment to colleagues or clients. Hence, sharing space is central to building and maintaining social relationships at work.
Help seeking/help giving	The practice of help seeking/help giving is a relational process of question asking and question answering aimed at building trusting relationships, encouraging new combinations of knowledge and creating a climate where there is no such thing as a stupid question. *Seeking help* from more knowledgeable others allows consultants and oil explorers to get targeted information exactly when they need it. Help seeking requires interactions with persons expected to be more knowledgeable. Help seeking might also build and revitalize knowledge so as to maximize its potential for effective use in the moment of creation. *Help giving* means to proactively trying to understand the other person (e.g. your client), being curious (e.g. asking questions), being patient (e.g. reflecting together with the client, not providing a quick-fix) and being non-judgmental (e.g. not laugh when an oil explorer wonders why the oil have migrated). The practice of help seeking/help giving can provide a sense of meaningfulness at work: When given help, the help seeker obtains a feeling of being seen; when providing help, the help giver obtains a feeling of being valuable and important.

Further, the empirical analysis reveals that high-quality connections play a decisive role in each of these five practices. Figure 1 depicts the reciprocal relationship that exists between high-quality connections and the knowledge sharing practices introduced above: Each of the practices both shapes and is shaped by high-quality connections. First, we found strong evidence supporting that high-quality connections enable the practices of mobilizing engagement, making it tangible, and help seeking/help giving. Second, we found moderate evidence supporting that high-quality connections enable the practice of interacting offstage. Third, we found strong evidence supporting that the practices of mobilizing engagement, interacting offstage, making it tangible and help seeking/help giving are contributing in building and developing high-quality connections between people who participate in these practices. Fourth, we found moderate evidence supporting that the practice of sharing space is contributing in building high-quality connections. In order to avoid any confusion we stress that

that Figure 1 shows an analytical distinction between high-quality connections and the five knowledge sharing practices. High-quality connections do not exist outside practice; they are always situated, constituted and developed in practice.

In the following sections we will present the empirical basis for each practice (as presented in Table 3), and the empirical basis for our model of the dynamics between high-quality connections and the five practices of knowledge sharing (as presented in Figure 1). We will elaborate upon moments of knowledge sharing and the role of high-quality connections in these moments. Throughout the analysis we will use the acronym HQCs when we refer to high-quality connections.

FIGURE 1. THE DYNAMICS BETWEEN HIGH-QUALITY CONNECTIONS AND THE FIVE PRACTICES OF KNOWLEDGE SHARING



4.2 Practice 1: Mobilizing engagement

The practice of mobilizing engagement means to assemble a team on a quest. A quest, or mission, is limited in time and includes strict deadlines and common goals. The practice of mobilizing engagement implies that something is at stake. It means that a team will have to do more work at a shorter period of time than usual in order complete the mission. This leads to a sense of urgency and mutual dependency in the team. Further, team members must share knowledge to a larger extent, and collaborate more intensively.

4.2.1 When the stakes are high: Marco and Pablo about time pressure, social bonding and intense knowledge sharing in Project Rogstad

Project Rogstad is one of the most successful projects in the history of Noroil. This project resulted in one of the largest oil discoveries on the Norwegian continental shelf, and from the beginning the project was unusual. Several informants emphasize that there was a lot at stake since the Rogstad area is going to provide a large percent of the daily production in Norway. A foreign competitor had challenged Noroil's request of operatorship by saying that they would develop this field by 2016. This created a strong political interest in developing the field as soon as possible. If Noroil were to maintain their operatorship, and secure Norwegian interests they had to set the same strict deadline as their competitor. In order to develop this field by 2016, Noroil "rallied their troops", and changed their normal work routines. Generally, in oil exploration the work process is first to explore, discover, and map prospects. The explorers then hand the mapped prospects over to the early development team that appraise the structure. However, in Project Rogstad the team members found themselves in the unusual condition of mapping other prospects, planning a new well, drilling the well and evaluating the well – all at the same time. Thus, the oil explorers had to complete various tasks at the same time and at a higher pace. Marco, one of the team members in the appraisal team, and Pablo, a member of the exploration excellence team, told us about how they experienced the time pressure and the workload in Project Rogstad:

> In Project Rogstad we did the job faster. They wanted us to do that job in a year, when these things are usually done in three years, so they needed to put more people into it. And then we needed to collaborate. Otherwise we would never

> achieve the goals in a year's time. They called all the experts in to work. [Pablo].

> The workload was huge. I think that everyone of us, for maybe a year, put anything between 5 to 20 hours overtime a week, so it was a very hectic moment. And information was coming in continuously, and it was really difficult to make sure that everyone was aware of what the others were doing, and what kind of information we were receiving. So you really had to find the person, and (laughs) almost grab them in the morning and say: "What's going on? What is happening?" (...). We kept on talking continuously. It never happened that I was just doing my own work. Some people feel more comfortable with not talking about their ideas at a very early stage. They want to have all the data; they want to have all the ideas in place before they feel comfortable to tell to someone else. Instead, in our team, there has always been from everyone very open communication from the beginning. So as I said, people kept calling me to say, "It could be this, it could be that" and I was doing the same with them. And of course by doing that, 80% of everyone's ideas were just turned away as rubbish because someone said that "It can't be that, because I have seen that in the other well next by, so this cannot be true", and someone else was telling me the same about other things. But that ensures you that you really work on ideas that can work. [Marco].

Pablo and Marco's experiences from Project Rogstad illustrate how the practice of mobilizing engagement implies a common goal, time pressure, a sense of urgency, and mutual dependency. In Project Rogstad these conditions resulted in more intense collaboration. When the team members experienced time pressure they became more dependent on each other in order to reach common goals. Marco had to "grab" his colleagues in the morning and quickly gather relevant knowledge. Due to the time pressure, the oil explorers shared more knowledge, and did so more intensively. People called Marco continuously to make sure he was always updated. By having this intense and rapid knowledge sharing, Marco and his colleagues were able to uncover and throw away bad ideas, and then focus on the good and relevant ones. Thus, the practice of mobilizing engagement can generate more rapid and intense knowledge sharing between team members.

However, the types and quality of relationships played an important role in enabling this intense knowledge sharing. Marco had a type of relationship with the other team members that allowed him to "grab" them in the morning and discuss openly with them. The team could throw away ideas as rubbish, and fights and discussions were possible without harming the relationship. The day after a fight the relationships had the capacity to bounce back (cf. Dutton & Heaphy, 2003):

> I must say that we were good friends, we are still good friends, and we have very open discussions. I think that has been the key; going through some harder times. And the hard times were especially those times when we were extremely stressed because of the big amount of overtime. (...) We had a very good

> collaboration. I can see that we were really a team in the sense that we enjoyed to work with each other, and we cared for each other, which is very good. I don't think through time, none of us has been set aside. Of course, through time there has been some misunderstandings, and some small conflicts, but I think that it is the sort of conflicts you have also with very close friends sometimes. (...) You have different point-of-views and sometimes you don't agree and you have to discuss it. But it has always been very civilized, and that made it easier to overcome different opinions. (...) So I think that we have some discussions in meetings and so on, and it was ending there – the same day and the morning after it was like nothing had happened. So I think it is mainly because of the respect that we have for each other. [Marco].

Marco's story is in many ways a story about HQCs. The team had a *high emotional carrying capacity*, as its members expressed both positive and negative emotions. Further, the *tensility* in the team allowed the relationships to "bounce back" after setbacks or fights. The tensility is also evident in that the relationships functioned in a variety of circumstances: Marco mentioned that the team members were friends as well as colleagues. Additionally, the team had open discussions, which is an indicator of a *high degree of connectivity*. The high degree of connectivity enabled the team members to share all ideas at an early stage, and also throw away ideas "as rubbish". Further, Marco reported several subjective experiences of being in a HQC with his team members. He said that the team enjoyed working with each other, and they cared for each other (*feelings of vitality and aliveness,* and *positive regard*). Further, Marco explained how everyone in the team was actively engaged in the project as they continuously shared ideas with each other (*felt mutuality)*. But how are the HQCs that were present in Project Rogstad related to the practice of mobilizing engagement?

We have seen how the practice of mobilizing engagement implies that there is something at stake. Employees have to work harder and faster to reach common goals, and this can be stressful. Many of the oil explorers that worked in Project Rogstad emphasized that they were stressed. Marco talked about the hard times he went through with his team members; times where they felt "extremely stressed" because of the amount of work they had to do in a short period of time. A classic view in the stress literature is that, under stress, men respond with "fight or flight," i.e. they become aggressive or leave the scene, whereas women are more prone to "tend and befriend" (Taylor, 2006). However, a recent study by Von Dawans, Fischbacher, Kirschbaum, Fehr and Heinrichs (2012) examines the social dimensions of stress reactivity. The authors suggest that acute stress may actually lead to greater cooperative, social, and friendly behaviour. Stress can thus increase prosocial behaviour. The researchers found that, rather than becoming

more aggressive after stress, men in the stress group actually became more trusting of others, displayed more trustworthy behaviour themselves, and were more likely to cooperate and share profits. One reason for why stress may lead to cooperative behaviour is our profound need for social connection. Human beings are fundamentally social animals and it is the protective nature of our social relationships that has allowed our species to thrive (Seppala, 2013). Additionally, social connection may be particularly important under stress because stress naturally leads to a sense of vulnerability and loss of control (Seppala, 2013). A study by Converse, Risen and Carter (2012) suggests that the feeling of being out of control, in turn, leads to greater generosity and helpfulness. These studies show how humans become vulnerable and cooperative under stress. When Pablo, Marco and their team members experienced acute stress in Project Rogstad they became vulnerable, and this might have increased prosocial behaviour in the team. In turn, the cooperative, caring and knowledge sharing behaviour might have strengthened the relationships between them. The strict deadlines and the scope of project Rogstad forced the team members to talk frequently, to throw away bad ideas and to express various emotions. The practice of mobilizing engagement may thus have expanded the emotional carrying capacity in the relationships by demanding the expression of a variety of emotions. Mobilizing engagement is thus a practice that can facilitate for the development of HQCs, *and* generate more intense knowledge sharing.

4.2.2 Vetle on working long hours in Consultus

The nature of work in Consultus is project based, and projects often involve the practice of mobilizing engagement. In the initial phase of a project, a team is sent on a mission that is limited in time and includes strict deadlines and common goals. In a mission there is always something at stake, and if necessary extra resources and time has to be invested in order to complete the quest. The interviews with the consultants in Consultus gave us a deeper understanding of how the practice of mobilizing engagement and the quality of relationships at work are related. Vetle, a young analyst in Consultus, talked about a successful project in the public sector, and how the relationships between team members became stronger during periods of overtime:

> You start talking together like friends. You bond more. And when you work long hours... Well, I don't know if it is because you get so tired, but the guards go down. We had a lot of dinners together, so you get the social aspect. And suddenly you know what everyone in the team does, because the few hours you have to yourself (when you are not at work), you talk about those too. But when you go home at four o'clock everyday, you don't know what your colleagues do (in their spare time). But when you go home at eight, and then meet on Sundays too (...) yes, you do get tired, but you get so close to the people on your team. We had conversations about private stuff. When you work long hours, talking about private stuff is unavoidable. Everyone needs coffee breaks. And we learned about each other's personalities. You laugh together. [Vetle].

Vetle's story shows how the practice of mobilizing engagement often involves working long hours with the team. The periods of overtime made the team members tired, but at the same time these periods entailed moments of laughter and friendly talk. According to Dutton and Heaphy's (2003), connections with higher quality have the capacity to withstand the expression of more absolute emotion and more emotion of varying kinds. People who are in a HQC know they are in a HQC by the safety they feel in displaying different emotions. In Vetle's story, time pressure and working overtime facilitated the expression of emotions of varying kinds (e.g. laughter, frustration). Vetle said that the "guards went down", and that the team shared more personal stories and bonded also on a personal level. This tells us that the practice of mobilizing engagement and working overtime can facilitate the development of HQCs as people get to know their team members better, and their relationships must function in a variety of circumstances.

4.2.3 Excluded from the mission: Ola's story about time pressure as an obstacle to knowledge sharing

Although the practice of mobilizing engagement can facilitate the development of HQCs and generate more knowledge sharing in some situations, this is not always the case. High-stake projects and time pressure can also be an obstacle for knowledge sharing because knowledge sharing takes time and detracts from ongoing task activities (Connelly, Zweig, Webster & Trougakos, 2012). This became increasingly evident in the interview with informant Ola in Noroil. Ola had worked in Noroil for four years. When he first started he was assigned to a team consisting of high performing explorers with complementary skills. This team was unusual in several ways; the team had a very strict deadline, but unlimited access to resources and autonomy to investigate in high-risk areas.

Their mandate was to look for large prospects in mature exploration areas, attacking blind zones and using whatever people and models they wanted. The team was shrouded with controversy from the start. Some of their colleagues saw them as self-contained and even arrogant: a group doing their own thing, ignoring other agendas and not spending much time on internal politics to justify their quest. Ola never felt like a real participant of this "mission":

> I went to my boss and said, "I have psychological issues, I need a real project", and I told her that no one helped me with my first task. (...) The first year... it was difficult for me because they (the other team members) were very busy. But then they started to look at Rogstad, and I got to look at the seismic... But I didn't get any tasks, because they were always in a hurry, so I basically did my own tasks (...). I think they viewed me as a trainee. They told me "you are not supposed to do anything (of value) in exploration the first ten years of your career". It was uncomfortable. (...) When you are new you don't have a clue. You really need that someone gives you a task, and that never happened. But one reason was that they were very busy when I was assigned to the team. They had been granted access to a new area when I started, and everyone was confused with regard to the confidentiality of the project. One time I asked a colleague of mine if he could show me something on his PC screen, but he said, "NO, you are not supposed to see this" (and he covered his PC screen). [Ola].

In Ola's story, there are few signs of experiences of being in a HQC. On the contrary, he explained that the team members did not request his knowledge, and there was no *felt mutuality* between Ola and the team. Ola did not receive any tasks and he felt uncomfortable. Despite efforts to be included in the team members work tasks, his efforts were rejected. He did not talk to his team members about this, and was placed on a different project after some time. This shows that there was little room for displaying different emotions between him and the team members. For Ola, the unusual conditions of this project became obstacles to knowledge sharing, as the team members were too busy and unwilling to include him in their mission.

Von Krogh's (1998) conceptualization of care in knowledge creation can help explain why the practice of mobilizing engagement was an obstacle to knowledge sharing in Ola's situation. Von Krogh (1998) argues that when care is low among organization members, the individual will try to *capture* his knowledge rather than share it voluntarily. Capturing occurs naturally, since the individual is left to his own devices; there is limited inquiry into his needs and scant help to be expected from colleagues. If the individual is a novice, he will have to learn new skills by himself. Von Krogh (1998) further argues that when care is low, attempts to present new ideas, concepts, or prototypes by the

individual will be met with a brusque attitude and harsh judgment by other participants in the knowledge sharing situation. When care is low, spending time listening to others is an effort and seen as a waste of time (Von Krogh, 1998).

When considering Ola's story, one can say that care between team members was low. Ola was left to himself, and he was told that he could not make a contribution for many years. The more senior oil explorers were also focused on their own tasks in the project. Taking time to share knowledge with Ola would mean that they had less time devoted to reaching their own goals (cf. Connelly et al., 2012). In the stories of Pablo, Marco, Vetle and other informants, knowledge was shared despite a strict deadline, and the fact that it would take away time from other tasks. In these cases the practice of mobilizing engagement even contributed to the development of the HQCs. However, in Ola's story knowledge sharing was absent. At the same time, Ola showed no signs of being in a HQC with his team members. We believe that lack of HQCs in Ola's story, made the practice of mobilizing engagement negative for knowledge sharing. This shows us that when time pressure is present, HQCs play an important role in knowledge sharing.

4.2.4 Positive dramas make knowledge sharing meaningful

So far we have seen how the practice of mobilizing engagement might lead to a sense of urgency, mutual dependency in a team, intense knowledge sharing between team members, and a development of HQCs. Another aspect of the practice is that it provided oil explorers and consultants with an opportunity to contribute to a mission that was larger than themselves; it somehow activated what is called positive dramas (Carlsen, 2008). *Positive dramas* are defined as "particular fields of meaning and engagement constituted by people to organize experience into lived narratives; enacted self-adventures marked by a sense of something important being at stake, unpredictability, emotional engagement, and involvement of self" (Carlsen, 2008, p. 55). Positive dramas can thus give people an experience of a higher purpose and faith in something larger than oneself. In both case organizations the feeling of being part of positive dramas was a source of more knowledge sharing and better collaboration. For instance, Brad a geologist working in Noroil said:

> Collaboration works better when people are task focused. If people have got a task to do with a deadline they do what is required to meet it. If that means getting help from other people, they are motivated to do it. In exploration things

> are often so far in advance that there is no motivation to do things quickly. (...) Noroil is a huge organization, and it does not move that quickly (...). But we are now in a position where the field that we are drilling is under development and there are some time-critical things going on in respect to choosing development scenarios. It means that the work that we do has to be speeded up in a way. We have for instance identified something like an upside potential to this discovery. It's not approved yet, and it may not come to anything. But the point is that when we do that, we know that we have the potential to drill it quite quickly, and so that makes you feel really alive. And then we know that in order to drill it quickly, we have to fix these deadlines. And then we have to really have to dig into the details, and get absolute clarity of what we are actually doing here. We have been discussing geology recently, and getting into the data and getting sort technical sort type of discussion. And that makes me really engaged. Because I know that if we get things right, we will drill this thing next year. And its not often you can say that; that you know that the work you do right now have an impact in a six-month time. In exploration our time scales are usually many years long. So that is an example. It's more like getting back to the geology. Looking at the data. Doing the sort of work that we are trained to do that we did at University. That type of thing, knowing that it will impact something tomorrow. [Brad, Noroil].

By drawing on narrative psychology and Carlsen's (2008) concept of positive dramas we can better understand why Brad's project were successful in terms of collaboration and knowledge sharing. Carlsen (2008, p. 63) distinguishes between five types of positive dramas: The battle, the mystery, the mission, the treasure hunt and the other. *The Battle* is characterized by competition; the goal is to dominate and win something. *The Mystery* is about solving puzzles and explore new scientific ground. *The Mission* is more targeted at doing good, and to convert nonbelievers. *The Treasure Hunt* is aimed at finding and seizing valuable resources. Finally, *The Other* is focused on enabling positive personal development in other individuals (Carlsen, 2008, p. 63).

When looking at the projects in Noroil and Consultus, one can find elements of these positive dramas. Project Rogstad (Noroil) have elements of The Battle, The Mystery and The Treasure Hunt: The teams that worked in the Rogstad area were focused on winning over the foreign competitor who had challenged Noroil's operatorship (The Battle). They were solving the puzzle of migration, and explored new scientific ground by discussing how the oil could have migrated from one side to another side of the structure (The Mystery). They were also aimed at finding and seizing valuable resources that would provide Norway with a lot of money (The Treasure Hunt). Project Norwegian Bank (Consultus) had elements of both The Other and The Mystery: The consultants involved were focused on solving the puzzle of how to make a training strategy, and they explored different training methods (The Mystery). They also emphasized how the final solution enabled positive development for the client

(The Other). In sum, the experience of being part of a positive drama created a motivation for sharing relevant knowledge.

4.2.5 The role of high-quality connections in mobilizing engagement

Having presented the practice of mobilizing engagement, we will now summarize what role HQCs play in this practice. We found strong evidence that HQCs enable the practice of mobilizing engagement, and that the practice contributes to building HQCs (see Figure 1). First, the practice of mobilizing engagement often expands the emotional carrying capacity in work relationships: Urgency and the feeling that something is at stake force team members to collaborate and discuss at a higher pace than usual. In order to complete their mission the knowledge workers must be more direct and throw away bad ideas and irrelevant knowledge. They also have to work overtime, and when people work overtime, they get tired, the "guards go down", and various emotions are expressed. Second, the practice of mobilizing engagement can strengthen the tensility in relationships: When people work overtime and dine together they share more personal stories, and as a consequence their relationships must function in a greater variety of settings. Third, we found that HQCs *enable* the practice of mobilizing engagement: Although the practice of mobilizing engagement might facilitate the development of HQCs and generate more knowledge sharing in some situations, this is not always the case. A clear mission with strict deadlines and time pressure can become an obstacle for knowledge sharing, as team members may be busy, and reluctant to take time away from own tasks. People might be especially unwilling to share knowledge when the quality of work relationships is low. However, if the quality of relationships is high and there is a felt mutuality, people find it meaningful to share knowledge and collaborate despite time pressure, strict deadlines and high stakes. Thus, HQCs might *enable* the practice of mobilizing engagement. In sum, these findings show that HQCs play an important role in the knowledge sharing practice of mobilizing engagement.

4.3 Practice 2: Interacting offstage

The practice of interacting offstage involves spending time together with clients or colleagues in informal arenas. Such informal arenas can be social events outside office hours, conversations in the hallway or gatherings around the coffee machine. When interacting offstage people meet face-to-face, gain knowledge about "who knows what", share positive emotions and get to know each other more personally. This makes knowledge sharing easier. For instance, it is easier to send an email and ask for help if you have already met the person. Personal relationships also improve the use of knowledge management systems (KMS), because such relationships allow unwritten contextual and confidential knowledge to be shared. When interacting in informal arenas people also escape from formal role expectations. This allows them to share ideas and knowledge more freely.

4.3.1 Knowing who knows what: How a personal connection saved Ida's day

The majority of the informants in Consultus claimed that having met a colleague in an informal setting made it easier to ask for help later. In Consultus, the employees typically work at the site of the client. This means that they are out of office most days, and communicate with colleagues working on other projects through electronic devices (e.g. voice and video calls, chat functions, emails and regular phone calls). When the consultants need help, and information about a problem of some sort, they often contact colleagues with more experience. This is exemplified in Ida's story about a project in a large Norwegian bank.

Ida had worked cross-industry as an analyst in the management consulting department in Consultus for one and a half year. When we first met her, her open, friendly face and humour was striking. She showed interest and provided thoughtful answers in a clear, direct language. One of the first things Ida wanted to tell us was how an American colleague she met at a two-week training course helped her succeed in her first project. The client in this project was a large Norwegian bank. The bank had recently gained a large corporate customer, and this customer needed to train all their employees in the new bank system. The task of Ida and her colleagues was to create a training strategy where the aim was to educate hundreds of end-users in the new system within a month. Ida had never created a training strategy before, and needed help:

> The client was clueless on how to make the training strategy in such a short time. But since I had been in the US (the two-week training course) I had started to get an overview of what different people in Consultus work with. And I knew about one person who had worked with the same task; to make a training strategy in a short period of time. So I contacted her and said: "Ok, I have this case, and I don't know how to do it. Do you have any information to share, or any advice for me?". I was so impressed! I sent an email, and the day after I had a reply from the US, with presentations and recommendations. So in this way that relation was important. (...) When you are new in a job you are insecure and you think, "How do I do this? I don't have a clue!". But knowing people allows you to say, "I have a challenge, how do I do this? What would you do?". And it is so much easier when you know someone, and, ah, sorry to say but when you have gone out together. Because then it is like "Ok, we know each other", and I can make a fool of myself because we have been to parties (...). About the relationship with my American colleague: I was in her workgroup and we had good chemistry. Some people you just get along with instantly. We were at the same age, same background. And we got to know each other during the evenings. So it was very easy to email her. (...) It is easier to send an email to someone if I know who he or she is. Then I can write "Hi, it was great meeting you the other day. By the way, I was wondering, can you help me with this and that?" [Ida].

Ida's story is an example of how the practice of interacting offstage makes it easier to ask for help later. Ida interacted with colleagues offstage while she was on a training course abroad. Consultus onboard all new employees by sending them to a global training course in the US. The participants are assigned to different work groups, and they change groups regularly during the two weeks in order to get to know as many people as possible. In addition to seminars and workshops, the participants mingled, dined and went to parties together. According to Ida, this gave her important knowledge about her colleagues' expertise. The training course also gave her an opportunity to develop relationships that made it easy to ask for help later.

The conversations Ida had on the informal arenas during the two-week course provided her with a knowledge of "who knows what". According to previous studies, knowing who knows what is seen as the key to knowledge sharing activities (Herbsleb & Mockus, 2003; Kotlarsky & Oshri, 2005; Orlikowski, 2002). It has also been suggested that instead of sharing specialized knowledge, individuals should focus on knowing where specific expertise is located (Faraj & Sproull, 2000). Such an approach to knowledge sharing is also known as *transactive memory* (Wegner, 1987). By participating in informal arenas Ida developed a transactive memory, which is defined as "the set of knowledge possessed by group members coupled with an awareness of who knows what" (Wegner, 1987). This type of memory is important in organizations as it may

positively affect group performance and collaboration by quickly bringing the needed expertise to knowledge seekers (Faraj & Sproull, 2000; Storck, 2000).

Further, Ida's story shows how HQCs are developed offstage, and how such connections are vital for knowledge sharing. Ida showed many signs of being in a HQC with her American colleague: They had chemistry, meaningful discussions during the workshops, and they had fun at parties. Ida also said that she could make a fool out of herself in front of this colleague. Because Ida and her colleague interacted during workshops, dinners and parties (e.g. offstage) their work relationship grew to function in a greater variety of settings (i.e. *tensility*). Further, Ida and her colleague displayed different emotions in these different settings. Ida explained that she could make a fool out of herself in front of the colleague. This means that she was safe in displaying different emotions, which is an indicator of *high emotional carrying capacity* (cf. Dutton & Heaphy, 2003).

Humour and fun was an important element in the interaction between Ida and her colleague. In the POS tradition, humour is seen as a form of communication that may lead to cooperation and high quality interactions (Cooper & Sosik, 2012, p. 474). Further, laughter has the "ability to build social ties, ease seriousness, relax constraints in thinking and encourage original combinations of knowledge" (Carlsen, Hagen, Clegg & Gjersvik, 2012, p. 156). There is an agreement within the management literature that "expressed positive emotions are a tool of social influence because encounters with a friendly person are positively reinforcing" (Rafaeli & Sutton, 1991, p.750). Research also shows that people who express positive emotions at work, such as humour, are more likely to receive assistance and support (Staw, Sutton & Pelled, 1994). Sharing a positive emotion can build people's personal resources, including the social resources essential for cooperation (Fredrickson, 2001). When interacting offstage, Ida and her colleague shared positive emotions and had fun. These experiences made it easier for Ida to ask for assistance and collaborate with her colleague at a later stage. As Ida said: "It is so much easier when you (...) have gone out together, because then it's like "Ok, we know each other" and I can make a fool of myself because we have been to parties".

Based on Ida's story, one can argue that the practice of interacting offstage enables work relationships to function in a greater variety of settings (i.e. enables tensility and higher emotional carrying capacity), and thus foster the development of HQCs. The HQC that was developed between Ida and her colleague is an

example of how such connections are micro-contexts that provide a fertile ground for knowledge sharing (cf. Dutton & Heaphy, 2003).

4.3.2 Tobias' story about trust and access to contextual information

Almost all informants commented that interacting offstage and developing personal relationships also made it easier to get access to contextual and confidential information. Since Consultus is a global consultancy firm, sharing knowledge through the knowledge management system (KMS) is considered an important part of their competitive advantage. This database consists of materials such as process charts, excel charts and Power Points, and the informants argued that the generic information available in the KMS often was of great importance to them. However, the consultants also argued that there were challenges related to the use of KMS. Due to confidentiality agreements between clients and consultants, consultants must remove contextual information when they share experiences in the KMS. This is problematic because the consultants sometimes need this contextual information in order to get use of the materials. However, it is difficult to get access to this information, unless you have a personal and trusting relationship with the consultant who is the "owner" of the information. As exemplified in Ida's story, personal and trusting relationships are often developed when people meet face-to-face and interact in informal arenas. Tobias, a young analyst working in the finance department, explained how personal relationships were of great importance in a successful project. The client was a Nordic company that wanted to cut cost and outsource some key processes.

> Sometimes these knowledge management systems don't work because it is difficult to share information worldwide when you have to protect the client. It is your job to ensure that no one recognizes the systems and the processes you have designed for the client. Because of confidentiality agreements we have to impose restrictions to the information we share in a global company, such as Consultus. However, what makes it possible, though, is the personal relation and the trust you have in relationships with some colleagues. For instance, when my boss knows someone who is an expert on this topic in the US, it is easy to get access to the knowledge. But if I have to contact this specialist in the US, who has shared this experience in the knowledge management system (without knowing him), it's more difficult. The contextual information is difficult to share without having a personal relationship. When you have a personal relationship you are in control. The other person knows that if I misuse the information, it is me who is the responsible one. [Tobias].

Here, Tobias highlights that it was the personal relationships that allowed the contextual information in the database to be exposed. As we have shown, such

relationships are often developed when people meet face-to-face and interact in informal arenas. Several researchers have emphasized the importance of trust and personal connections for knowledge sharing. For instance, Abrams, Cross, Lesser and Levin (2003, p. 71) found that personal connections, and sharing information that was non-work related was an important practice in developing trust in work relationships. Meeting face-to-face and sharing personal information made people seem more "real" and therefore more approachable and safe. The authors concluded that establishing a personal connection seemed to "promote interpersonal trust important for knowledge transfer" (Abrams et al., 2003, p. 72). Further, Inkpen and Tsang (2005) claim that when trust develops between individuals there will be less need to protect oneself and one's knowledge from opportunistic behaviour. This is what happened in Tobias' project when the US expert shared contextual information with Tobias and his project manager: it was the personal and trusting relationship that enabled the transfer of important contextual knowledge. In sum, Tobias' story shows that having a trusting personal relationship allows the KMS work optimally.

4.3.3 Sharing geological interpretations at the "backstage"

The practice of interacting offstage was also an important ingredient in successful projects in Noroil. Oil exploration in Noroil is about geological and seismic interpretations, and the nature of work is highly interdisciplinary. Because an explorer is dependent on his colleagues' interpretations in order to proceed with his individual tasks, it becomes extremely important to share interpretations continuously. Many of the oil explorers explained that such interpretations were shared during coffee breaks, in hallway conversations, and around the coffee machine in the morning. During the interviews it also became clear that the oil explorers wanted *more* informal arenas (e.g. "a forum of silly ideas", "a sofa in the lounge area" etc.). This was best illustrated in our interview with Torgeir and Kari. In the following quotes, Torgeir and Kari explain how the barriers to knowledge sharing are lower on informal arenas:

> The clue is that it (sharing ideas) needs to happen in an informal arena. It's like everything needs to have a label; it should be called a seminar, and be so nice, and then it should be presented to someone else. But it's a lot easier... The best ideas are created in the morning, when you are out here drinking coffee. You just think of an idea: "Maybe we should take a look at this?". You cannot force creativity. It is something that occurs inside. (On informal arenas) the barriers

> are lower. You can propose things that... If you have a formal, arrogant setting - as I felt when I worked in another location, it was like you got frowned upon for proposing something new, well, then you stop proposing. If there are no barriers you have so much more to work with. [Torgeir].
>
> Maybe we should get better at hanging around the coffee lounge and throw out problems we have. Perhaps it is easier in such a setting, a "technology coffee": If someone has a small problem, put it on the table and invite the persons that are in your surroundings. Or in the team meetings, if someone has a problem, we could get better at that. (...) We should have a couch in the coffee lounge, so that people get closer. Have you noticed that when people sit in a couch, it is easier to say "There is room for you here". And then you start communicating differently. You get closer (...). I can sit (in the couch) for a long time. We should have a couch in the coffee lounge. That would contribute to many creative solutions (...). With the couches people would actually start talking. [Kari].

To understand why the informal arenas were so important in Noroil, we can draw on Erving Goffman's (1959) "dramaturgical approach" to human interaction. Goffman was a pioneer in the study of face-to-face interaction, or micro-sociology. In his dramaturgical approach, social interactions are analyzed in terms of how people live their lives like actors performing on a stage. Goffman viewed human actions as dependent upon time, place and audience. He further distinguished between "front stage" and "backstage" behaviour. As the term implies, "front stage" actions are visible to the audience and are part of the performance. In contrast, people engage in "backstage" behaviours when no audience is present. For example, an oil explorer is likely to perform in one way in a formal seminar, but might be much more casual when drinking coffee with his colleagues. It is likely that he behaves in a certain way around the coffee machine that might seem inappropriate in a formal seminar.

Torgeir and Kari show us that the oil explorers' knowledge sharing behaviour is dependent on whether they are performing on the front stage (e.g. present something in a meeting) or on the backstage (e.g. discuss something in the hallway or in the coffee lounge). These "backstage" interactions in Noroil play a significant role in the exchange of knowledge: Torgeir and Kari argued that when they entered the informal arenas, the barriers were lower and they started "communicating differently". Unlike on the front stage, communication backstage is based upon shared understanding and language, trust and occupational membership, as well as situational opportunity and privacy (Fayard & Weeks, 2007). The "backstage" can be described as a place where "performers" interact away from the gaze of the "audience" (Waring & Bishop, 2009). The informal arenas provide an important space and break from the "audience" where the oil

explorers can interact outside the normal, scripted customs of the "front stage" – where they escape formal role expectations, vent their frustrations, clarify roles and lines, and reinforce cultural norms. For instance, Torgeir explained how the formal arenas and seminars stifled his creativity. For Torgeir, the best ideas were created in the morning when drinking coffee with his co-workers. Here, Torgeir and his colleagues could interact and propose ideas without having an audience and formal role expectations. In contrast, Torgeir explained how the "formal and arrogant setting" at his last job made him feel "frowned upon", and thus stopped him from proposing new ideas. In this setting Torgeir stopped sharing ideas due to his concerns about others' reactions to his proposals, and the risk of being embarrassed. However, in the informal arena, he felt a larger degree of safety in proposing ideas.

The backstage is also a place to raise issues or concerns. This might include, for example, "staging" talk (Goffman, 1959) related to the technical planning of work, or the conveying of "secrets" and ideas that are inappropriate at front stage (Waring & Bishop, 2009). When we asked Kari what she would do (if she had all power) to increase collaboration in oil exploration, she expressed that she wanted a "technology coffee". This arena was a place where oil explorers could put small problems on the table and invite other people to discuss with them. On the same question, Torgeir answered that he wanted a "forum of silly ideas"; a backstage where explorers could share silly ideas about where to find oil:

> I could picture having some sort of forum of silly ideas. Where we got together people from different groups, and every Thursday we could say: "Who has the most outrageous idea?" There would be no limit to what people would propose, right? There could be a prize for the most hilarious prospect of the week. You know, then people could propose: "Why not drill here?" Things are often just pushed into a team site, or a power point in order to be presented to someone that knows even more. Their opinion has to be heard first. At the end of the day, the barrier is too high. The filtering of ideas is too rigid! An example is the large discovery at project Rogstad. It is a prime example on how you have these "truths": "No, there is no use in drilling here, there is no way the oil has migrated in there". And then they drill, and they make the biggest discovery - right next to the place they have been drilling for years! It shows that sometimes you benefit from not giving a shit about accepted truths. [Torgeir].

Torgeir's "forum of silly ideas" and Kari's "technology coffee" would act as a backstage where the explorers could test their ideas in a supportive and less pressured setting. Using Goffman's terminology, these arenas would represent a space where many of the usual norms and hierarchies of inter-professional work would be broken down. This escape from formal role expectations, and the

entrance into the role as a "creative prospect maker", might lead to a more open dialogue and exchange of information. Or as Torgeir said: "there would be no limit to what people would propose".

4.3.4 The role of high-quality connections in interacting offstage

Having presented the practice of interacting offstage, we will now summarize what role HQCs play in this practice. So far we have presented the practice of interacting offstage. With regard to the role of HQCs, we found moderate evidence that HQCs enable the practice of interacting offstage, and strong evidence that the practice contributes to building HQCs (see Figure 1). First, the practice of interacting offstage allows work relationship to function in a greater variety of settings (i.e. enables tensility): When people meet and get to know each other offstage they might develop a safety in displaying different emotions, which is an indicator of high emotional carrying capacity. Second, the practice of interacting offstage can foster a higher degree of connectivity: When people interact offstage they escape from formal role expectations and this opens up possibilities for action and creativity. Thus, the practice of interacting offstage might foster a high degree of connectivity, tensility and greater emotional carrying capacity in work relationships. Third, HQCs *enable* interactions in informal arenas in several ways. People that are in a HQC will share knowledge more freely in an informal setting, and will also actively engage in social settings and non-work related activities. In this way being in a HQC will enable the practice of interacting offstage.

4.4 Practice 3: Making it tangible

The practice of making it tangible is a work form that transforms abstract concepts and incomplete ideas into visual representations or physical objects. Visual representations and physical objects include drawings, sketches, as well as photographs, maps, physical models and visualizations on the computer screen. The practice of making it tangible is about testing and improving half-worked ideas on an early stage of development. When intangible and individually held knowledge is made tangible it becomes accessible for others. Additionally, visual representations and physical objects function as common references that allow knowledge workers to ground their divergent understandings in the physical world. In this way, the practice of making it tangible makes knowledge sharing between different knowledge domains easier.

4.4.1 Ida: A consultant and an experimenter

In Consultus, the practice of making it tangible involved conducting simple, small experiments, or pilots, in an early phase of a project. For example, Ida conducted experiments in order to test a training strategy she developed for a large Norwegian bank. During the experiments her ideas about the training content were turned into webinars, and the customer was invited to test them. The practice of making it tangible made it easy for Ida to discuss the solution together with the client. Their feedback gave her clear indications on whether she was on the right track or not. Ida also emphasized that these experiments generated new ideas and useful discussions with the client:

> When we had discussed things for a while, and decided, "This thing here should look like this, and this thing here should be like that", we conducted pilots. When we had decided on a solution we invited a customer in the bank to test it. We asked the customer "Does this work?", and then we discussed it afterwards. It could be simple things such as "Did you see the picture?", "Did you hear the sound?", or "Was the content adjusted to your needs?". Then you get a clear indication on whether things are working according to the plan. (...) In this project we continuously did tests and pilots. After being a consultant for some time, I have learned to appreciate pilots and early drafts. (...) If you just manage to get some thoughts down on paper and think, "Ok, this is how I think it will be", and then discuss it with a colleague, then you get so many ideas back! Ideas you might not have gotten if you were sitting by yourself, thinking: "This must be perfect". [Ida].

Ida's quote illustrates how experiments and prototypes can stimulate creativity and knowledge sharing in the early phase of a project. According to Ida,

prototyping made people more open to collaborate and to share knowledge. Several researchers and practitioners have highlighted the benefits of early prototyping. Tom Kelley, former general manager in IDEO, one of the world´s leading design firms, have argued that less-polished prototypes also have the potential to reveal and remove errors (Kelley & Littman, 2005, p. 43). Prototyping has been central to the IDEO tool set, and a key to their many successful innovations. Kelley and Littman (2005, p. 56) claim that by prototyping "you'll get more honest genuine feedback. You'll learn from each prototype so that the finished result can be smarter, better and more successful than the prototypes that got you there". The training strategy that Ida and Consultus recommended to the Norwegian bank was based on this trial and error. Because of the pilot experiments, Ida got honest feedback from the customers in the bank. Based on this feedback she could make proper adjustments so that the training strategy and the recommended solution became even better. Thus, early prototyping might explain why the project was so successful, the client was satisfied and the bank still uses the training material. Ida was what Kelley and Littman (2005) calls an "experimenter"; she made ideas tangible, invited others to collaborate, and learned by trial and error in order to reach the best solution.

4.4.2 The power of sketches

Fredrik is one of the most experienced and most respected oil explorers in Noroil. He has been involved in several large discoveries, and is also praised by his colleagues for being an excellent discussion partner. Fredrik had an important role in the successful Rogstad project. When Fredrik was asked about the specific techniques he used in this project, he talked about the importance of visual representations and physical surroundings:

> The way the room is designed is very important. (...). You need a notepad where you can sketch opportunities, sketch ideas - and walls. A pin-up wall. And whiteboards. It is about getting the ideas up and out there visually, because we may not be that good at describing things in words in our industry. (...) If you speak and draw at the same time, then you get double impact. (...) People pay more attention when you speak, draw and make mistakes, compared to when you present something in a glossy presentation where everything is already decided. (...) It's about others being able to take your pen. That the pen is passed around. [Fredrik].

Drawing on Hargadon and Fanelli's (2002) complementary model of organizational knowledge, we can argue that the practice of making it tangible

stimulates the ongoing, circular interaction between individually held latent knowledge and the empirical knowledge manifested in the surrounding environments. As previously presented, *latent knowledge* "represents the individually held schemata of organizational members", whereas *empirical knowledge* "encompasses the physical and social artifacts that surround individuals in organizations" (Hargadon & Fanelli, 2002, p. 294). When Fredrik said, "If you speak and draw at the same time, you get double impact", we catch a glimpse of the ongoing cycle between empirical and latent knowledge: When speaking, Fredrik applies his schemata (latent knowledge). When drawing, his latent knowledge is converted into a physical and social artifact (empirical knowledge). This empirical knowledge is converted into latent knowledge again when Fredrik's colleagues experience and reflect upon his drawings.

Oil exploration is an imagination-intensive form of work in which visuals of prospects where oil might be found are placed on various maps. Wall displays, sketches and maps are artifacts that help the explorers to see how things connect. When oil explorers make their knowledge tangible by sketching they construct, reconstruct and modify the scripts, goals, and identities that make up their relevant schema encompassing such work. This means that the sketches and other physical objects they use at work provide them with the raw material to construct new schemata about where to find oil. These tools then become important in the changes that occur in their schemata, and that subsequently provide the raw material for novel actions within oil exploration.

4.4.3 Visual representations as boundary objects

In oil exploration a variety of competences and skills are combined in order to make prospects, and make discoveries. The work is knowledge-intensive and the different specialists working together possess different knowledge that must be combined in order to map prospects. Oil exploration involves the independent and collaborative work of geologists, sedimentologists, petrophysicists, managers etc. These different parties represent distinct communities and cultures. Oil exploration thus involves cross-functional teams that cut across organizational boundaries. However, the informants in Noroil told stories about very close forms of collaboration across professional disciplines. In these stories, visual representations and physical tools were important as they mediated between the different knowledge domains. One of the informants that emphasized the

importance of tangible objects was the geologist Brad. Brad had been part of many successful discoveries, and had worked at the Rogstad project as a team leader for the appraisal team. In the following quote, he explains why access to physical objects is important for collaboration and knowledge sharing between oil explorers:

> What we do in exploration is about collaboration, but it is all about creativity. And they are sort of different. So you need to collaborate in the right way in order to be creative. Because it's all about coming up with ideas, and maturing those ideas. So we like to sit in environments where we have magnetic walls we can stick posters on. (...) We like Mac tables. We like big desks, two large screens. You see, Google have poles from the second floor, and beanbags… You know, that is one extreme, but as an explorer and geologist you should be closer to that spectrum, more than "everyone is in a box" sort of thing. (...) You need to have the small team rooms, things on the walls. (...) It happens automatically, if you have the right props, the right overview. Seismic lines, or the right maps on the wall that give the overview on everything. So when someone is trying to explain an idea they have been working on in their individual computer, they can just point to a map and that sort of thing enters. We have small team rooms (...) with two big screens and a whiteboard – that is very important, so that you can draw your ideas. [Brad].

For Brad, the physical surroundings were of great importance. He explained that different objects, such as magnetic walls, posters, and maps made it easier to collaborate and understand each other as it provided people with an "overview". To better understand Brad's thoughts, we can draw on the literature on interdisciplinary teams and boundary objects. This literature has shown that when each member brings different types of knowledge into the team it can create a lack of a common ground (Bechky, 2003). This results in problems of information exchange, interpretation and integration. Without this common ground, members may be unable to evaluate each other's contributions to the dialogue (Bechky, 2003). However, the use of boundary objects facilitates this knowledge interaction by providing a common ground. Boundary objects can be physical products, components, prototypes, sketches, notes or drawings that are used in conversational interactions (Majchrzak, More & Faraj, 2011, p. 3). Such objects are flexible epistemic artifacts that "inhabit several intersecting social worlds, and satisfy the information requirements of each of them" (Star & Griesemer, 1989, p. 393). In Brad's team the member's backgrounds were diverse, and they might have had different terminologies and technical references. However, the maps, magnetic walls and posters functioned as boundary objects. These boundary objects aided knowledge sharing because they provided a physical touchstone that served as a basis for linking the different disciplines together. The maps and

posters allowed the oil explorers to ground their divergent understandings in the physical world. As Brad says: "When someone is trying to explain an idea that they have been working on in their individual computer, they can just point to a map and that sort of thing enters". When Brad and his team had easy access to for example a map, they suddenly had a common ground to base their discussion on. The map functioned as a "concrete hook on which to hang contextual interpretations" (Bechky, 2003, p. 325). Based on Brad's example, we can argue that the maps, magnetic walls, and the posters both became prototypes that made abstract ideas tangible, *and* boundary objects that mediated between different knowledge domains.

4.4.4 Early prototyping as a strategy for building high-quality connections

In Consultus, early prototyping and visual representations was also a part of the interaction between consultants and clients. In fact, some consultants emphasized that they engaged in prototyping activities in order to build a good relationship with a client. Additionally, some consultants argued that they used early prototyping to secure that the client developed a sense of ownership to the project. This is best illustrated in Viktor's story. Viktor is a senior manager who had worked in Consultus for twelve years. He told us that he used to make issue trees. An issue tree is a graphical breakdown of a problem that dissects it into its different components, which in turn progress into details and action points. Issue trees are useful in problem solving to identify the root causes of a problem as well as to identify its potential solutions. The day after meeting a client for the first time, Viktor used to make a summary of the conversation. Based on this conversation he drew an issue tree and made a PowerPoint presentation, which he sent to the client. According to Viktor, the issue tree was an incomplete draft. However, sending a draft often had a positive effect on the relationship between Viktor and his clients:

> I do this (send a presentation with an issue tree) to get feedback on whether we have the same understanding of the problem. One thing that I like to do, especially after workshops, is to make a draft. The sooner you can make a draft of the product you are supposed to deliver, a draft that looks done, but might include several empty boxes etc., the better. Maybe the draft includes only headlines. This is one of the most effective practices I use. Because it has several effects. Firstly, people are not used to get a draft the day after. Thus, only giving the client a draft is positive! They are nearly shocked by having something concrete the day after something has been discussed. So you start off at good terms. No matter how bad it (the draft) is, it is seen as a bonus.

> Secondly, you get it anchored; you get to check the clients' expectations and whether our approach is doable. And if there is a huge gap, it's not that much of a problem anyway, as they did not expect to receive the draft the day after anyway. (...) What I always say to people that work for me is that I do not see the value of drafts that look like drafts. (...) If you are making a slide, there is no reason for the boxes to be uneven, and out of order. It is done in a second to get them on line, right? You should be able to recognize the finished product, (...) even if there is something missing. The focus should be on the storyline. You write headlines, and you make sure they are not index-headlines like "introduction", "questions" and "conclusion" - that is just word blabber. You need to have a message in all of the headlines, and if you draw a parallel to the research setting, this is your hypothesis. (...) Doing this early is an effective way to get consensus around what you are actually set out to deliver. And the longer you wait, the more finished it should look, because less slack is acceptable. So the faster you make an early draft, the better. In every way. Because it buys you time. (...) As a consultant (...) you have no power at all. (...) I don't have the authority to decide what the client should do, right. So then you need to be clever. So those are some examples of getting things anchored. But the most easy way to do it is to say "We made this draft, do you feel like is reflecting what we are working on?" Make sure that they know what it takes, so it is not just a report, but that they have an ownership to the facts, analysis, decisions, priorities and stuff like that. [Viktor].

In Viktor's story it becomes clear that the practice of making it tangible was used to build a good relationship with the client. By sending the presentation immediately after the first meeting, the client was impressed. Further, for Viktor it was important to send a draft that looked professional. The customer should be able to recognize a finished product, although there are holes and missing information. Although Viktor used prototypes actively in the early phase of a project, he argued that the draft "should not look like a draft". Why is that? One obvious reason is that in the early phase of a project, a consultant needs to show competence and professionalism. Viktor did not have an established relationship with this client and needed to make a good first impression. In order to do this, sending an early and professional draft became important.

Insights from research on social cognition can help us understand Viktor's strategy. This stream of research shows that the way people judge each other when they first meet reflects evolutionary pressures (Fiske, Cuddy & Glick, 2007). Social animals must determine immediately whether the other is friend or foe, and whether the "other" has the ability to enact those intentions. According to Fiske et al. (2007) this determination process is based on two universal dimensions of social cognition: warmth and competence. The *warmth dimension* captures traits that are related to perceived intent, including friendliness, helpfulness, sincerity, trustworthiness and morality, whereas the *competence dimension* reflects traits that are related to perceived ability, including intelligence, skill, creativity and efficacy (Fiske et al., 2007, p. 77). Following this

logic, Viktor showed both warmth and competence. By rapidly sending off unfinished, but professional-looking presentations, he sent out a clear message to the customer: He spent the whole evening working on the presentation (demonstrating warmth, friendliness, and helpfulness), and he had the ability to enact on his intentions by making a professional looking draft (demonstrating competence). In this way, prototyping becomes a strategy for building a trusting relationship with the customer.

Further, in Viktor's example prototyping is used to involve the customer and facilitate knowledge sharing in an early stage of the project. Viktor said that the issue tree he made could be compared to a hypothesis: He sent the presentation to test whether he and the client had similar understandings of the client's problem. From a HQC perspective, early prototypes might have the ability to develop the degree of connectivity in a connection between a client and a consultant. When Viktor sent the unfinished presentation with the issue tree the day after the first meeting, this became an invitation for the client to share their concerns and expectations. This finding is similar to what we found in Ida's story. Early prototypes might generate new ideas and knowledge sharing. In a HQC, openness to new ideas and influences is one of the characteristics. The practice of using prototypes opens for action and creativity, and thus strengthens the degree of connectivity in the relation.

4.4.5 Making it tangible depends on high-quality connections

In the sections above we showed how Ida used prototypes to invite the client to share ideas and knowledge in an early phase of a project. Further, we showed how Viktor sent early drafts in order to get feedback from the client on his understanding of the client's situation. In this case the practice of making it tangible was used to build a stronger client-consultant-relationship. However, some informants emphasized that the practice also required some confidence in the relation. Sharing ideas at an early stage, showing someone a drawing that is unfinished, or a draft that you may not be very proud off, can make people feel vulnerable. Informant Ida said that she showed prototypes and ideas to the colleagues she had a good relationship with:

> (...) It's a little scary. I think everyone has a need to feel competent. That they do a good job, and that they come up with good ideas. If you are unsure of "Is this what we thought of?" or "Is this the best way to go" then you have to spar

> with someone. So it's a little scary. You risk hearing that "This is crap". But to be honest, that has never happened to me. (…) The better you know a person, the easier it is to be honest. And the easier it is to trust that the person you are talking with is being sincere with you. I usually spend time bouncing ideas and share drafts with people I feel like I have a good relation with. [Ida].

With these words, Ida expressed how making it tangible is a vulnerable activity. Ida said that when you share half-finished ideas, knowledge and drafts, you risk hearing that "this is crap". Handing over prototypes to a manager or a client requires a certain confidence, and "crude prototypes require more courage than polished ones" (Kelley & Littman, 2005, p. 45). Based on Ida's reflections, it seems that the practice of making it tangible is dependent on the quality of the connection people have with their team members. In connections where there is a high degree of connectivity, there is an expansive emotional space that opens the possibility for action and creative thinking (Dutton & Heaphy, 2003). Could it be that it was this emotional space that allowed Ida to share half-worked ideas with her colleagues? In that case, HQCs might enable the practice of making it tangible, and thus the generation of ideas and knowledge sharing. In sum, prototyping is not just an activity that can contribute to developing HQCs and the degree of connectivity in a relation (as in Viktor's example). Since the practice of making it tangible is a vulnerable activity, a certain degree of connectivity may be required (as in Ida's example). In this way, the practice of making it tangible and HQCs are interdependent.

4.4.6 The role of high-quality connections in making it tangible

Having presented the practice of making it tangible, we will now summarize what role HQCs play in this practice. We found strong evidence that HQCs enable the practice of making it tangible, and that the practice of making it tangible contributes to building HQCs (see Figure 1). When people share unfinished drafts, drawings, prototypes and physical models they invite co-workers to collaborate. This invitation is a message to the recipient that the sender is open for his/her ideas and reflections. Thus, the practice of making it tangible can increase the degree of connectivity in relationships, and thus foster HQCs between co-workers. However, this process works both ways: Sharing unfinished ideas, drafts, sketches, or prototypes is also a vulnerable process. HQCs will provide the expansive emotional space and safety that make sharing less dangerous. Thus, HQCs enable the practice of making it tangible.

4.5 Practice 4: Sharing space

The practice of sharing space is a work form that includes frequent face-to-face interactions, spending time in the office, and sitting next to one another while working. Whereas virtual communication puts restrictions on communication, the practice of sharing space implies proximity, and enables people to use gestures, words and physical resources when communicating. Sharing space thus allows people to share knowledge verbally, non-verbally (gesticulating) and visually (sketching, using objects). The practice of sharing space can also create a symbolic perception of equality and commitment to colleagues or clients. Hence, sharing space is central to building and maintaining social relationships at work.

4.5.1 The best consultant is never at the office

In consultancy and in Consultus, a common saying is that "the best consultant is never at the office" [Viktor]. All of our informants mentioned the importance of moving into the client's office. For instance, Filip explained how physical proximity to the client was part of the process of creating a good client-consultant relationship. By sitting together with the client, Filip went from being "that guy from Consultus", to becoming a colleague:

> It never happens that we work alone. I mean, Consultus-people, we sit together with the client. And I think that is one of the things that create a good client-consultant relationship. You sit physically next to the client. We try to avoid the impression "We are from Consultus, and you are the client", and rather work together as *one* team. (...) The most important thing in the initial phase of a project is to get to know each other. (...) And especially in long-term projects. The project I am involved in now is a large, long-term project. In this project we are trying to become colleagues. (...) Because it can be a little bit like, "Us and them" in the beginning. Especially when there are two large delegations. We are about at least a hundred consultants from Consultus. And then we have the counterpart on the client-side. So when we are sitting together in office spaces (...) we are trying to become like one. In 99% of the projects we do sit together with the client, and that is both positive and negative. (...) It's good to become close with the client. At the same time, as a consultant you become a bit rootless. Especially when you change projects all the time. You don't develop that identity, like if you were sitting on the same desk every day, with the same colleagues. [Filip].

Working in the client's office became important as a symbolic act for Filip, signalling that he was highly committed to the project. Research has shown that being seen in the office is related to improved perceptions of employee performance because it signals responsibility and commitment to the firm (Elsbach, Cable & Sherman, 2010). When being seen in the client's office, Filip

signalled that he took responsibility and was committed, and this may have had a positive impact on his relationship with the client. In addition, sitting together with the client was a way for Filip to become integrated in the social community. By sitting together with his client Filip turned the consultant-client relationship into a friendly colleague relationship. The practice of sharing space thus facilitated the connection to function in more circumstances, and thus may have contributed to increasing the level of the tensility in the relationship. Further, by sharing space with the client Filip conveyed presence; he signalled that he was available and accessible. Conveying presence is one activity that fosters HQCs (Dutton, 2003a, 2003b).

Although Filip highlighted that the practice of sharing space with the client had benefits, he felt a bit "rootless". According to research on sociality and physical objects by Knorr Cetina (1997) people develop emotional bonds with the objects that make up their workplaces. In this way, office spaces become "something like an emotional home for workers" (Knorr Cetina, 1997, p. 9). Offices influence individual experiences in addition to creating interactional experiences that workers share (Zerubavel, 1996 in Elsbach & Bechky, 2007 p. 90). By moving into the office of his client, Filip might have developed an emotional attachment to the clients' workspace instead of the Consultus office. His identity might have become attached to the new workplace, and the people working there. However, this was important in order to develop a good relationship, and to remove the distance between the client and him as a consultant (us and them). By sitting next to the client, and interacting with them on a daily basis, Filip became their colleague, and a natural part of what constituted their work environment.

In Consultus, the practice of sharing space and sitting together was also related to dress codes and clothing. Almost all the consultants mentioned that they tried to "dress like the client". In order to become a colleague, the consultants needed to adapt to the culture of the new office. This involved changing their clothes, and changing their body language. For example, our informant Even said "we try to dress down, walk like them, have coffee with them, slow down and adjust to their pace". Scholars have argued that physical artifacts such as dress codes, office design and décor can be thought of as the visible part of the culture of an organization (Elsbach & Bechky, 2007). Such artifacts also symbolize status. What we hang on the walls (a painting or pictures of family members), the

furniture we use (modern or antique), the objects we put on our shelves (children's trophies or reference books), and the clothes we wear (a black suit or a flannel shirt) symbolize our group's location in the social order (Elsbach & Bechky, 2007, p. 87). Thus, individuals and organizations interested in promoting a culture of equality among groups often discourage or eliminate more visible status symbols, such as exclusive clothing, executive lunchrooms or fancier offices for top managers (Elsbach & Bechky, 2007, p. 87). This is what happens when Even and the consultants in Consultus get dressed like the client. They try to eliminate status symbols, in order to become closer to the client, and to feel that they "stand in the client's shoes". Even explained that for him to become a colleague, and succeed in convincing these new collegues about a proposal, he had to dress down and slow down. In sum, these examples from Consultus illustrate the importance of physical artifacts and office space in building a successful client-consultant relationship.

4.5.2 Physical proximity enables the sharing of complex knowledge

In addition to symbolic effects, time spent in the office can be essential for access to spontaneous and informal sharing (Elsbach & Bechky, 2007, p. 80). Marius, a consultant in Consultus told us about a successful project in a power company. In this project, Marius sat close to the client, and this gave him access to relevant information and knowledge.

> We worked in a large office together with two of the employees (from the client) that worked in the same group. It's important to share space because you get access to more information. You get access to the interesting things that happen in the company. (...) Basically, I just overheard something that one of the employees who worked in this office talked about. It was a telephone conversation. And this helped me afterwards. (...) When you sit close to the client it is much easier to get information about frustrations and to develop a closer relationship. You become the trusted advisor. (...) I feel like physical proximity is what is needed. It gives a totally different form of knowledge transfer, participation and engagement. And in a company that is so concerned about travel costs, I mean, they have the best intentions about having telepresence equipment etc. (...). Get everyone together! It would do so much for competence transfer, and for collaboration. (...) I just want to be close to the people I work with (laughs). I want to see, meet and feel the person. [Marius].

In addition to being close to the client, being close to his colleagues was important for Marius. He even claimed that physical proximity was the most important factor for collaboration and knowledge sharing. Being physically close to colleagues was also important in Noroil. The oil explorers emphasized the value

of face-to-face discussions, and sitting close to each other while working. This was best illustrated in project Rogstad. In this project, Marco was responsible for the sedimentological part. However, he was located in a different office than his team members, and he explains that the distance of 25 meters negatively affected collaboration and knowledge sharing:

> I now sit in a different wing of the building. And I don't receive the flow of information that would make my job much better. And there is this problem. I actually don't know how to solve it, because it is not a matter of will, because they are very willing to share information, and I am very willing to discuss with them, it is just that the flow in a way is interrupted, or baffled, not interrupted. (...) In project Rogstad, I was sort of responsible for establishing this flow of communication with the people that were doing the special studies. I went to see them maybe not every day, but every second day. I was also updating them of what was our current knowledge, so that they were able to steer their special analyses towards our most recent understanding. (...) We had four or five different special studies going on, and I was going to see the people that actually were working upstairs nearly everyday. (...) And I just sat with them and they were updating me about their results, and then I was saying: "You know, now we have drilled the reservoir section, we found ten meters of sand, and from what I see I think that this is a beach. What do you think? Is it consistent with your data? Is there any other sort of analysis that you suggest - (explaining) because they are the experts, that we should do in order to confirm or exclude?" In that way there were not a gain in just doing their own work delivering to us, but they were continuously in the loop and that made them more a part of our team than just a provider of a service. (...) (In oil exploration) We deal mostly with interpretation. And you see something and you interpret it, but sometimes there is more than one interpretation. Most of the time it is more than one possible interpretation. And if you can narrow down the number of interpretations by using different disciplines, which means speaking with other people, that is very beneficial for you. Because otherwise you might choose one interpretation, and discard all the rest, and then it is the not relevant one. [Marco].

Why was it so important for Marco to be together physically with his colleagues? One explanation is that some forms of knowledge work require physical proximity (Allen, 2007). Many things, particularly technical ideas and problems, are difficult to communicate verbally. We need the assistance of rooms, gestures, diagrams or sketches. In an article about architecture and communication, Allen (2007) has shown that when knowledge is dynamic and rapidly changing (such as in Noroil) physical proximity is needed as staff should be kept continuously updated. For Marco and the oil explorers it was much easier to discuss complex problems and share complex knowledge when they were in the same room. Marco was updating the specialists on the most recent knowledge, so that they were able to focus their analyses in this direction.

Gathering all the interpretations, and then narrowing them down by talking to people helped the explorers choose the most relevant interpretation. In this way,

physical proximity also enhanced the quality of the decision making as it provided Marco and the specialists with access to the most recent, and most relevant knowledge. This can explain why Marco felt like the flow of information was "baffled" when he was at one point physically separated from his colleagues.

4.5.3 Sharing space allows for embodied interactions in front of visuals

Finally, we discovered that the practice of shared space allowed both consultants and oil explorers to communicate through gestures and through visual and physical resources. When we interviewed Per, a senior oil explorer in Noroil, it became evident how the access to seismic labs and big screens aided knowledge sharing between him and his team members. By sitting together and sharing screens Per could more easily discuss complex issues with his colleagues:

> *[Per talks about physical tools that ease his work and about the importance of office design]:* You need big rooms, with big screens, 3-4 meters. So that everyone can sit together and look at things at the same time. They have it in Oslo; it's called seismic labs. A meeting room like this, but everyone has their own desk with their own screens. The screens are linked. So that if we work on the same thing (demonstrates by pointing to his screen and "plays"): "I don't get this", then we can put it on the big screen, take two minutes and discuss that part. If you have unanswered questions and problems, you can easily discuss it with the other team members. That makes it easy to discuss internally. That is very, very important. And that is something that is evident now, as we have moved. We have been placed in separate offices, although no one wants that. They are too small. It is a huge step back. We want to sit together; we want to discuss each other's problems. We want to *see* what the others are doing. Right now, I do not have control on what people are doing. I have to check all the time, and ask that they are doing. Instead of things just being resolved easily by sitting together in concentrated workrooms (...). I am currently in an isolated office. The others are in two different team-rooms. It is not optimal at all. I am running between the rooms all the time, and they are running to me. We are losing the shared feeling of working towards something together. So how we are seated is a very relevant issue. [Per].

Per's explanation illustrates how the practice of shared space is important because it enables oil explorers to collectively visualize and physically touch the knowledge that is being shared. Sharing space involves getting your knowledge into your hands together with your colleagues. It is a well-established insight in the tradition that is known as "grounded cognition" (e.g. Barsalou, 2008) that what people do and the spatial and material context in which they find themselves when they learn about or think about something influences their work. For instance, it has been shown that the sight of a graspable object will activate the same neurons responsible for actually grasping that object (Gallese, 2003). This

shows us that the world is represented and processed through not only cognitive but also sensory-motor processes. One way this happens is through gesturing. When Per and his team members sat together in front of the screens they could point at the seismic maps while explaining things. They could use their hands and their bodies when they shared their geological interpretations. Tversky, Heiser, Lee and Daniel (2009) provide part of the explanation for why gestures are so important in knowledge work: "Gestures are effective in part because their relationship to meaning is more direct, less mediated. In addition, and in contrast to words and diagrams, gestures can embody the knowledge they are meant to convey" (Tversky et al., 2009, p. 130-131). When Per and his team members shared space they were able to gesticulate when discussing problems. Gestures can reveal if a person understands the message being conveyed. If not, one can restate the information in a different way. The use of gestures is only available in face-to-face interactions.

Per complained that the explorers had been placed in separate offices. According to him this was a huge step back, as separate offices do not allow them to "see what the others are doing". Allen (2007) argues that managers have a tendency to underestimate the importance of face-to-face meetings, as they are often happy communicating on the phone. A much larger portion of managerial information than technical information can be communicated by telephone and e-mail. Thus, managers might forget that they deal with less complex information than do the engineers and scientists reporting to them (Allen, 2007, p. 32). Although we do not know whether this was the case in Noroil, we know that the practice of sharing space has been an important ingredient in successful projects in this company. This would mean that when communication is desired among explorers, the workstations should be located in a way that minimizes the travel distance between them.

4.5.4 Sharing space underpins the practice of making it tangible

All the other informants working in Noroil also explained that problems were solved faster when they were able to use sketches, point at computer screens or look at seismic models. These activities require physical proximity. The oil explorers preferred sitting next to each other so that they could draw together, look at things together, and show their colleague something on a map that could not be easily understood by using words. For instance, Sara said, "If we saw

something on the seismic we just turned around and said, “Ah look at this” and “What do you think of this?” (...) We made posters, and noted down ideas. That was probably the best collaboration I’ve had so far”. Based on Sara’s reflections we see that the practice of sharing space underpins several of the other knowledge sharing practices. Sharing space is for instance ideal for engaging in prototyping activities. When people share space, they can prototype instantly by just turning around and engage the people sitting close by.

4.5.5 The role of high-quality connections in sharing space

Having presented the practice of sharing space, we will now summarize what role HQCs play in this practice. We found moderate evidence that the practice of sharing space contributes to building HQCs (see Figure 1). First, sharing space signals equality and commitment, and can turn a consultant-client relationship into a friendly colleague relationship. Thus, sharing space and sitting together can help the connection to function in a variety of circumstances, and elevate the level of tensility in the connection. Second, sharing space opens up for the use of body language, and makes communication more rapid and accessible. When team members sit together and share space, they can interact face-to-face. In face-to-face interactions more feelings can be expressed, and the practice of sharing space can thus expand the emotional carrying capacity in work relationships.

4.6 Practice 5: Help seeking/help giving

The practice of help seeking/help giving is a relational process of question asking and question answering aimed at building trusting relationships, encouraging new combinations of knowledge and creating a climate where there is no such thing as a stupid question. *Seeking help* from more knowledgeable others allows consultants and oil explorers to get targeted information exactly when they need it. Help seeking requires interactions with persons expected to be more knowledgeable. Help seeking might also build and revitalize knowledge so as to maximize its potential for effective use in the moment of creation. *Help giving* means to proactively trying to understand the other person (e.g. your client), being curious (e.g. asking questions), being patient (e.g. reflecting together with the client, not providing a quick-fix) and being non-judgmental (e.g. not laugh when an oil explorer wonders why the oil have migrated). The practice of help seeking/help giving can provide a sense of meaningfulness at work: When given help, the help seeker obtains a feeling of being seen; when providing help, the help giver obtains a feeling of being valuable and important.

4.6.1 Asking and answering questions

A central aspect of the help seeking/help giving practice is to ask and answer knowledge questions related to a specific work task or a project (e.g. what does this mean?). The practice also involves having the courage to ask questions that may be perceived as "stupid" by co-workers. Questions were an important ingredient in successful projects in both Noroil and Consultus. This became especially evident in a project where Torgeir and Kari managed to successfully convince the quality control to approve an extension of a well. During this project Torgeir and Kari seeked help from Fredrik, a senior explorer. Torgeir and Kari praised Fredrik for asking all the important "why-questions":

> Fredrik gives the best advice. He is like a mentor, and we got him involved at an early stage of this project. The first presentation was done in a week, and he told us "This is not good enough". He gave us a list of things to improve, we noted them down, had a new meeting with him the next week, and got everything in place. Then he was satisfied. It is very important to be collaborative. To involve the right people. We need to have a finished project, and then the volumes should be quality checked. (...) To put it this way, he (Fredrik) knows what he is talking about, and it is good to have those around; kind and supporting people. He is the definition of a supporting colleague. He is nailing stuff into the nitty-gritty detail. He asks all the "why-questions", and it feels really good when somebody asks. Especially for me, having worked in this area for only four

> months. I struggle sometimes because I lack the full overview of where all the things are. And then Fredrik is really helpful; he helps me and gives us positive feedback. (...) We were encouraged by Christian to ask Fredrik about all sorts of things: Bio- and geophysics. We don't have enough knowledge to understand everything, so when we were presenting we got the feedback that we had interpreted a multiple, and then we were like "What do we do now?" We had to go back, start all over again with a new prospect. Then Fredrik asked, "How do you get the extension to work like this?" and then we discovered that this wasn't sensible. We invited a geologist and he had several examples. We involve at an early stage all the people that can contribute and help us. And that is especially helpful, because then you don't have to reinvent the wheel every time. [Kari].

This quote illustrates how asking questions and seeking help from others allowed Kari and Torgeir to get targeted information exactly when they needed it. For instance, they asked Fredrik for feedback on their interpretations. Based on his own experiences Fredrik gave them a list of things to improve before presenting to the quality control group. When Kari and Torgeir asked Fredrik questions they "accessed" his schemata and goals, his latent knowledge (cf. Hargadon & Fanelli, 2002). When Fredrik answered and engaged in actions with Torgeir and Kari, his latent knowledge was made empirical. In this process, knowledge was reproduced as it was made empirical in Fredrik's actions, and made latent again by Torgeir and Kari's reflections on and experience of that action. By actively involving and seeking help from more knowledgeable colleagues, Torgeir and Kari got access to knowledge that prevented them from having to "reinvent the wheel".

Kari and Torgeir's stories about Fredrik also illustrate how characteristics of the help giver matter in the process of seeking help. During the interviews it became evident that characteristics of the helper can determine whether help seekers who are in need of help actually ask for assistance. In order to ask for help, the help seeker needs to feel safe (Edmondson, 1999). Fredrik who was the help giver in this example was described as a mentor, and as "the definition of a supporting colleague". He was described as helpful, patient and non-judgmental. Kari also emphasized that he gave them honest feedback. Interestingly, Fredrik explained that asking questions and being a "helper" was his strategy to make new discoveries within oil exploration:

> If I invite you to say something... What you will tell me is valuable. It is not wrong. There will always be a probability that what you tell me is correct – and I think that is important. It is ok to say something "stupid". That's open communication. (...). If I try to get something out of someone, I will ask open questions. I have learned something about asking these questions. People need to provide the answer themselves. They have the answer inside of them. It is important that they figure it out on their own, rather than to have me tell them right away (...). It may be time consuming, but I believe that people get more out of that. Instead of you telling them arrogantly, "This is the way it is" (...).

> People become more secure. I believe that this perception of safety is very important. Trusting each other - that no one will tell you "This is stupid". Another thing I am trying to become more conscious about is to keep on asking. "Nice suggestion, but what will you do about it? What does it mean?" So I will keep on asking, until we reach a decision. (...) I believe that breakthroughs (in exploration) happen when you combine people who have deep knowledge within an area with new people that don't have this knowledge. If these inexperienced new people have the right attitude, they will ask a lot of questions, "stupid" questions. And then the people with the deep knowledge, they may think that they have the answers to everything, but no they don't. Suddenly they discover a connection they were not aware of. [Fredrik].

Fredrik's experience was that breakthroughs in exploration happen when Noroil is able to combine knowledgeable people with more inexperienced people. One reason for this might be that new and inexperienced people often ask all the "stupid questions". They also (more or less consciously) questions established truths. When this happens in interactions with more knowledgeable employees new combinations of knowledge might arise. For instance, when Kari and Torgeir asked Fredrik questions about bio- and geophysics, how they had interpreted a multiple, and what they should do with that, they had to go back and start all over again with a new prospect. Thus, by engaging in the practice of help seeking/help giving new combinations of knowledge about where to find oil emerged. Actively asking questions has been seen as beneficial for innovation and creativity by several researchers. Field studies of successful product development firms shows that asking for help and asking "stupid" questions is central for the innovation of new products and solutions (Hargadon & Sutton, 1997; Kelley & Littman, 2005). Further, researchers have found that help seeking, help giving and reflective reframing play a key role in triggering moments of collective creativity (Hargadon & Bechky, 2006, p. 494). *Reflective reframing* means rather than mindlessly answering the question as given, or deflecting it completely, one should consider not only the original question, but also whether there is a better question to be asked (Hargadon & Bechky, 2006, p. 492). Kari, Torgeir and Fredrik engaged in reflective reframing; they built upon each other's comments and reconsidered old ideas in a new context. However, we believe that essential to this process was the quality of the relationship between them. It was the relationships that gave Kari and Torgeir the courage to ask "stupid" questions and engage in reflective reframing.

During the interviews with Kari and Torgeir it became evident that they found themselves being in a HQC with Fredrik. This is illustrated in the quote above. Fredrik says, "What you tell me is valuable (…). There will always be a

probability that what you tell me is correct – and I think that is important. It is ok to say something stupid". Viewing this in a HQC lens, one might say that this is a sign of a high degree of connectivity. Fredrik is clearly open to new ideas and influences from Kari and Torgeir. Further, we also see signs of emotional carrying capacity in their relations. Fredrik encourages Kari and Torgeir to ask "stupid questions", and show imperfection and feelings of insecurity. In addition, he gives them honest feedback (e.g. "This is not good enough") without being arrogant. Their relationship withstands the expression of these various emotions. In this way, we can see that HQCs play a vital role in the knowledge sharing practice of help seeking/help giving. It is easier for help seekers who are in need of help to ask for help when they find themselves in a connection where there is a high degree of connectivity and when the relation are characterized by emotional carrying capacity.

Kari and Torgeir found themselves being in a HQC with Fredrik. Fredrik demonstrated what Dutton (2003a, 2003b) calls *respectful engagement*, which is one of the best ways to foster HQCs. When co-workers engage with each other respectfully, they create a sense of social dignity that confirms self-worth and reaffirms competence (Margolis, 2001). Dutton (2003a, 2003b) claims that there are five major strategies to foster respectful engagement: Conveying presence, being genuine, communication affirmation, effective listening and supportive communication (Dutton, 2003a, p. 54). In Fredrik's case, communicating affirmation and effective listening were especially evident. *Communicating affirmation* means to actively look for the positive core in another person (Dutton, 2003b, p. 30-31). One way to communicate affirmation is to see others in a positive light. Actively looking for the value in another means to actively approach another person with the expectation of affirming whom they are and what they have to offer. You affirm others when you convey that you are genuinely interested in their feelings, thoughts, or actions (Dutton, 2003b, p. 30-31). When Fredrik's stated that "What you tell me is valuable, there will always be a probability what you tell me is correct, and that is important," he was actively affirming his colleagues' opinions and knowledge.

Fredrik further practiced what Dutton (2003a, 2003b) refer to as effective listening. *Effective listening* is empathic and active. Empathic listening is centred on the speaker, with the aim of learning about his or her point of view. Active listening is responsive and involves paraphrasing (expressing in your own words

what you just heard someone say), summarizing (try to put together the complicated flow of a conversation in a few "bulleted" points), clarifying (asking questions and inquiring in order to ensure that you understand the whole picture) and finally, soliciting feedback (ask if he person is getting the sense of being heard) (Dutton, 2003a, p. 56). Fredrik was both an emphatic and an active listener: He was interested in his colleagues' opinions and focused his attention on Kari and Torgeir when they came to him for advice (empathic listening). Further, Fredrik explained that his way of helping someone was to ask questions in return. He argued that people will most likely find the answer to the question themselves, if they are given the time to think and reflect (active listening).

Fredrik's method of demonstrating respectful engagement can be compared to the approach that a counsellor takes in a therapy setting (Nelson-Jones, 2012). When help seekers are given the opportunity to explore their problems and possible solutions, they learn more. They will also develop a greater ownership to the final solutions, compared to if a help giver just provides them with a finished solution. Having respect for clients' capacity to make their own choices is referred to as one of the core conditions of "the helping relationship" that a counsellor will offer a patient (Nelson-Jones, 2012, p. 32). Having respect for clients' capacity to make their own choices is referred to as one of the core conditions of "the helping relationship" that a counsellor will offer a patient (Nelson-Jones, 2012, p. 32). In Consultus, the consultants (i.e. help givers) were concerned with providing such helping relationships to their clients (i.e. help seekers). We found several of the core conditions that are present in this "helping relationship" in our conversations with the consultants in Consultus.

4.6.2 Becoming a trusted advisor

> In my early professional years I was asking the question: How can I treat...or change this person? Now I would phrase the question in this way: How can I provide a relationship, which this person may use for his own personal growth? (...) It has gradually been driven home to me that I cannot be of help to this troubled person by means of any intellectual or training procedure (Rogers, 1961).

The practice of help seeking/help giving was also an important knowledge sharing practice in Consultus. The consultants are the help givers in the client-consultant relationship; they are hired for their problem solving skills, knowledge and ability to take a look at the organization with a pair of fresh eyes. The clients are the help

seekers that are in need of assistance. During the interviews we discovered that a main objective for the consultants was to become a "trusted advisor" to their clients. A trusted advisor was described as a person that the client would believe to be reliable, competent, trustworthy and approachable; someone who acts in the client's interest, is eager to help and available to answer questions. In other words, a trusted advisor is someone that demonstrates both competence and warmth (cf. Fiske et al., 2007). For the consultants, a part of their motivation to become a trusted advisor was based on the benefits that come with this role: Trusted advisors are often the first to be asked for help when a client has a problem and can more easily convince a client to buy their solutions. In this way, trusted advisors can save Consultus both time and money. In our attempt to grasp the concrete practices underlying this concept, we asked the informants about what they did to become a trusted advisor. Marius answered the following:

> I have heard many times from my project manager that the client might fool you. The client will say, "No, we know what the problem is, we can solve it". But then the problem is actually something completely different. (...) *(What do you need in order to understand what the clients real problem is?*): Often it's about getting the hard facts and numbers. (...) And then it is really important to have respect for the people that are in the situation, the ones that are the most affected – the most knowledgeable people. (...) In the last project we had very limited information, and we needed to interview and get information from the people that were actually doing the work. Then we basically just sat down and listened to how they were working on things day-to-day. We tried to find out the problems and frustrations they had. I think that is one of the reasons the project was such a success. They felt like they were taken seriously. It was not just someone that told them, "This is the solution". (...) We just dived in there with an open mind talking and listening to people, formally and informally. (...) We tried to understand which problems and pain points they had in their processes. We had to understand a long and complex process, and what they were actually doing. We spent a lot of time on that. You have to do that in order to give them advice and suggestions. [Marius].

Marius explained that a common situation for a consultant is to deal with clients who mistakenly believe that they already know the solution to their problems. The challenge for a consultant is therefore to first understand and communicate the clients' real problems, and then have the clients realize that they need to change something in order to function better. In order to achieve this, a certain relationship is needed. Marius explained that becoming a "trusted advisor" is about showing respect for the client's understanding of the world, but at the same time be honest and sincere if he or she disagrees. Further, Marius showed genuine interest in the client; he spent a lot of time and effort in trying to understand their "pain points" and problems. He argued that he had to do that in order to be able to

give the client good advice and suggestions. The relationship that Marius wished to achieve with a client is similar to the relationship a therapist tries to build with a patient.

Insights from clinical psychology show how providing a "helping relationship" (Rogers, 1957, 1961) is essential for helping a patient to function better. In 1957, Carl Rogers published a seminal article entitled "The necessary and sufficient conditions of therapeutic personality change". In this article, Rogers made a scientific evaluation of therapy. He found that regardless of which therapeutic techniques that were used, clients reported similar changes in themselves (Rogers, 1957, 1961). Rogers then identified six conditions for therapeutic change, four of which – emphatic understanding, unconditional positive regard, congruence or genuineness, and respect for clients' capacity to lead their own lives – are often referred to as the core conditions of a "helping relationships" (Colledge, 2002, p. 1; Nelson-Jones, 2012, p. 32). Most counsellors will agree that these core conditions for therapeutic change are essential, irrespective of which therapeutic techniques they use (Nelson-Jones, 2012). The core conditions were present in several of the client-consultant relationships in Consultus.

The benefits of becoming a trusted advisor became clear in Marius' story about a project in a power company. Consultus were hired to implement a process improvement project. Marius worked closely with the client and another person from Consultus. He was responsible for process mapping, analyses and business cases. Marius told us about how the client was extremely pleased with the result, and that Consultus was re-hired in two projects at a later stage. Central to Marius story was how he became a trusted advisor to the clients' project manager:

> You need to be genuinely interested and engaged in the problems of the client. Both on the issues concerning the project, but also those issues that are unrelated! You have to empathize with them. That is what we did in this case. But that does not always happen. It depends on the type of relation you have developed with the client (...). (*How do you manage to demonstrate this engagement?*). Hmm, I don't know.... Is it possible to fake it? I believe that it has to be genuine. At least it was in this project. You can come off as being engaged, even if you are not. But that is much more difficult. *(How do you demonstrate this genuineness in practice? What do you do?)* For example, when you are in a meeting, instead of being laidback, you should sit on the edge of your seat – be on top of things, be participative. It's about asking questions, even if I don't really have a need for an answer. It's about taking part in a conversation. Find out things, probing - what is the client really concerned about. (...) *(What do you mean being engaged in the project, but also engaged in issues unrelated to the project?*). Like in this case, the project manager (from the client) changed her position in the company, and was given management

> responsibility for the first time. And that was something we spent time talking about. It was an issue that concerned her, and we were able to give advice about what and how she could act, and what she should be aware of. [Marius].

One of the core conditions of a helping relationship is *empathy*; the capacity to identify oneself mentally with and to comprehend the client's inner world (Nelson-Jones, 2012, p. 32). Marius showed empathy by spending time on, and asking questions about, issues that were unrelated to the project. For example, when the project manager (from the client side) changed position in the company and was given management responsibility for the first time, he gave advice and help. He followed the client's energy. This is similar to what a therapist will do in order to build a helping relationship (cf. Rogers, 1957, 1961). In addition to being emphatic, Marius explained that he was genuinely interested and engaged in the client's problems and frustrations. He tried to express this genuineness by sitting on "edge of his seat", and being curious and participative in conversations. By doing this he successfully managed to have his client open up and provide him with all the information he needed. Marius became a trusted advisor, and the client extended the contract with Consultus for two more projects.

In the same way that a therapist should be honest and genuine with a patient (cf. Rogers, 1957, 1961), our informants emphasized that a trusted advisor should always act in the client's best interest, even if that meant to disagree on something. This was especially important for Tobias:

> It's all about trust. There are many empty phrases in the consultancy industry, but we have something that we call the "trusted advisor". Over time you want to become a "trusted advisor" to the client. The way of doing this is to deliver high performance over time, and to prove that the client can trust you. Not suggesting things is also important... or, to put it this way, you should only suggest things you truly believe in. Because, if you suggest (acts like he is a consultant) "In Consultus we have so much knowledge about SAP BPC, it is a GREAT tool, and exactly what you need - it can do anything!". (Acts like he is a client). "Ok, you might be right. But have you considered this and this aspect?". It's all about providing specific and tailor made solutions for the specific client you work for. It's all about trust. I can disagree with a client (that trusts me) and I can also disagree with someone I do not know, but then I need to have arguments that are extremely well grounded. (...) In some cases you just let the client run the show, but then you haven't developed the right type of relationship with your client. When you don't disagree, when you don't give honest feedback, you end up with a poor client relationship. You will lose the client at some point. [Tobias].

In Roger's concept of the helping relationship, *genuineness* means that helpers communicate to clients as real persons in an honest and sincere way (Nelson-Jones, 2012, p. 34-35). Tobias' quote illustrates how genuineness and tensility (cf. Dutton & Heaphy, 2003) are needed in order to succeed in consultancy. If a

consultant disagrees with the client but fails to give resistance, the project might suffer. The consultant might end up with providing a poor solution, and as a result the client will most likely choose another consultancy firm the next time they need help. To fully understand why genuineness is needed in order to maintain a good client-consultant relationship, one can look to the concept of generative resistance (Carlsen, Clegg & Gjersvik, 2012). Carlsen et al. (2012) found that generative resistance was a central quality in extraordinary idea work. In *generative resistance,* the point is to use confrontations, roadblocks, doubts and questions not as negative constraints but as valuable levers for bringing energy into interactions and movement into thinking (Carlsen et al., 2012). As mentioned, a common situation for a consultant is to deal with clients who mistakenly believe that they already know the solution to their problems. By using generative resistance a consultant can bring movement into the clients perception of the problem and expose the client to different views and possible solutions. To be genuine and provide generative resistance is thus important for a consultant if he or she wants to become a trusted advisor. However, as a final remark Tobias emphasized that a trusting relationship was necessary in order for him to give honest feedback, provide resistance, and share knowledge with the client. Again, we see the importance of trust and HQCs for knowledge sharing.

In this section, we have shown how the practice of help seeking/help giving in Consultus was related to the concept of being a trusted advisor. By using the analogy of the therapeutic situation, and Roger's concept of "the helping relationship", we have seen the importance of proactively trying to understand the other person, show respect, be empathic, be patient, be non judgmental, put oneself in the other person's shoes and demonstrate engagement. These behaviours are central in order for a client to open up and to share knowledge with a consultant.

4.6.3 Demonstrating care and conveying presence

So far we have demonstrated how asking- and answering questions, and becoming a "trusted advisor" were central features of the help seeking/help giving practice in Noroil and in Consultus. A third aspect is the role of care in knowledge sharing. During the interviews it became clear that effective knowledge sharing puts particular demands on the way people relate to each other. As Von Krogh (1998) argues, "when care is low among organization members, the individual will try to

capture his knowledge rather than share it voluntary (...)" (p. 139). On the contrary, when there *is* care in organizational relationships, "(...) there will be mutual trust, active empathy, access to help among team members, lenient judgment towards participants in the team, and courage. In such a situation, Von Krogh (1998) explains, "the individual will bestow knowledge on others as well as receive active help from others (others bestowing knowledge on him)" (p. 139-141). Further, Von Krogh (1998) concludes that the process of mutual bestowing provides fertile ground for a distinct process of creating social knowledge in a team. He calls this process *indwelling,* which means to go from "looking at" something to "looking with" someone. The concepts of care, bestowing and indwelling were present in several of the stories we were told by the informants. For instance, Ida in Consultus told us about an episode where she had experienced the power of care in knowledge sharing:

> After a while, it became clear that it was me who had the technical competence in the team, and I knew that several of the others were a bit uncomfortable with the technical stuff. It's always uncertainty with everything new, and when you deal with such technical gadgets, people often become insecure. Therefore I invested a lot of time in being available so they could ask me, or use me to test the technical solution. I remember a night I was in the office. The clock was 8pm and one in our team (from the client side) logged on the system. He wore an apron and he was cooking in his kitchen at home, and he said: "Can we test the technical solution while I'm boiling potatoes?" And I said: "Yes, sure we can!", and then we just sat and tested the solution. It was like trial and error without any stress, and he knew that I was available. I was there to help, and it was like "We do this together". After that episode it happened something in our relation, and in the team. For me, he signalled that he was very interested - he used his evening to test the solution. (...) That gave an extra boost to the team. [Ida].

In this episode, Ida demonstrated care for the client: She was the one with the most knowledge in the area, and she invested a lot of time in being available. She spent her evening on testing the technical solution with one of the team members. As she said, "It was like trial and error without any stress". In this episode Ida and the client went from "looking at" to "looking with" the client (cf. Von Krogh, 1998), and social knowledge was created. Using Von Krogh's (1998) concepts, the indwelling that took place lead to commitment to the idea, to an experience with the technical solution, and an experience with the other team member. Ida's colleague (from the client side) experienced the value of Ida's personal knowledge for the successful task performance of the whole team. On the other hand, Ida did not just "look at" the customer with his problems, she "looked with" the customer at his problems". By sharing this experience, Ida and her colleague could perhaps

identify new and previously unrecognized needs and the technical solution could be developed to satisfy these needs.

In addition to caring about her client, Ida conveyed presence by always being available for questions. According to Dutton (2003b, p. 26) *conveying presence* is one strategy for using respectful engagement to build HQCs. Being present with another person implies being psychologically available and receptive. It means creating a sense of being open and subject to being changed through the connection with that person. Conveying presence involves turning one's attention to another, and it is as much about resisting distraction as it is about inviting engagement. Presence can be conveyed through body language and by being available and focused on the here and now as opposed to the past or the future (Dutton, 2003b, p. 26-30). Ida signalled presence by being available at all times, being ready, and being capable of being used. She responded to the request from the client in a way that signalled, "I am here, I have time, and I would be happy to help you". By demonstrating this form of respectful engagement Ida was also fostering HQCs with her client (cf. Dutton, 2003a, 2003b).

4.6.4 Help seeking/help giving as a source of meaningfulness and engagement

> When people come into my office, ask questions and I am able to answer - that reminds me "Hey, I actually get this"! It feels good when someone asks you questions. [Kari].

This far we have established how the practice of help seeking/help giving was beneficial for knowledge sharing in both case organizations. Interestingly, help seeking/help giving was also seen as a source of meaningfulness and engagement at work. When given help, the oil explorers and the consultants obtained a feeling of being seen; when providing help, they felt valuable and important. As the quote above shows, Kari felt good when someone asked questions to her. Similarly, her colleague Sara explained that the best part of her job was being asked "knowledge questions", questions related to her specific expertise:

> *[Sara talks about the things that engage her]*: What I look forward to is when people ask me questions and I can take a few minutes and answer them (...). I suppose I just like to help people if it's not too complicated. (...) I like the knowledge questions (...) And I like discussions, that's what I like the most about my job, sit down with somebody that maybe has a similar background and just go back and forth about something. I think that's what I like specifically most about my everyday. [Sara].

The fact that Kari and Sara felt good when they were able to answer questions is not surprising. Research on prosocial motivation has shown that helping others have beneficial effects, not only for help recipients but also for helpers themselves (Batson, 1990; Penner, Dovidio, Piliavin & Schroeder, 2005). For example, experiments have demonstrated that helping others increases one's own positive affective states (Dunn, Aknin, & Norton, 2008; Lyubomirsky, Sheldon, & Schkade, 2005; Williamson & Clark, 1989). Why is that? One explanation is that positive self-evaluations increase after acts of helping (Williamson & Clark, 1989). In particular, helping others is an experience of success that can boost feelings of competence (Grant, 2007; Penner et al., 2005). When Sara and Kari are asked questions and are able to answer they feel competent. And perceived competence is a core motive in life and at work (Ryan & Deci, 2000; Spreitzer, 1995). When employees help others, they feel that they have effectively contributed to other people's lives.

However, helping others requires both time and effort. Although Sara emphasized that her picture of a perfect day at work included getting knowledge questions from others, she wanted to spend no more than one or two hours answering such questions. She said, "If you have people dropping in all the time, then you get distracted in your own work. (...) If I could, I would channel it to one time". Sara claims that it is most beneficial and practical to gather all knowledge questions to one time of the day. This is similar to what researchers within the field of prosocial motivation have found (Grant, 2013); when helping is consolidated in one chunk, it yields more happiness for the help giver.

Knowledge sharing and having the opportunity to seek help and give help is clearly important for people's wellbeing at work. The opposite; being deprived the opportunity to seek or give help can have negative consequences. For example, Sara told us, "People in Noroil get very disappointed if you don't ask". The negative sides of not being given the opportunity to engage in the help seeking/help giving practice became even more obvious in in Ola's story. Ola was an explorer who had invested a lot in his professional career. In addition to having a doctoral degree within geology, he had moved far away to be able to work in Noroil. As previously mentioned, Ola was at the beginning of his career assigned to a team consisting of high performing explorers. He never felt like a real member of the team, and he sought help without getting answers. He told us that

he was not given the opportunity to contribute and share knowledge, and this became a painful experience:

> I went to my boss and said, "I have psychological issues, I need a real project", and I told her that no one helped me with my first task. (...) I didn't get any tasks, because the other team members were always in a hurry (...). I think they viewed me as a trainee. They told me, "You are not supposed to do anything (of value) in exploration the first ten years of your career, don't expect that you will do anything in these oil companies the first ten years". It was uncomfortable. (...) When you are new you don't have a clue. You really need that someone give you a task, and that never happened. (...) But after six months I got an assignment, a small prospect. But then my manager said, "You need a project". And I told them " Yes, I recently finished my doctoral degree, so I am used to having a project". But they couldn't create a project for me, so that was disappointing. [Ola].

Ola's story illustrates the potential negative sides of engaging in the help seeking/help giving practice. First, Ola experienced that his colleagues were reluctant to help him when he needed it. Despite his efforts, he did not receive any help to get started in his new job. Further, Ola got the impression from his colleagues that he should not expect to contribute with anything (of value) in exploration the first ten years of his career. For Ola this meant that he would be prevented from contributing with his expertise although he had a doctoral degree in geology. It also meant that he would be prevented from giving help in an area that was important to him.

Researchers have argued that knowledge and identity are closely related (Alvesson, 2001). The construction of a positive identity for a knowledge-intensive worker, such as Ola, is tied to education, status, and interesting work tasks. When Ola was prevented from getting interesting tasks and from contributing with his expertise, he might have felt a loss of meaning as these aspects most likely were closely related to his identity. As previously mentioned, perceived competence is one of the core motives in life (Ryan & Deci, 2000; Spreizer, 1995). In contrast to Sara and Kari, Ola was not in the position to experience the positive feelings (e.g. feelings of competence, positive self-evaluations) that often occurs after helping someone. In Ola's case, this had direct consequences for his experience of meaningfulness at work: He was not recognized for his knowledge; he got psychological problems, and considered to quit the job.

To gain a deeper understanding of Ola's story, we can look to Dutton's (2003b) concept of corrosive connections (i.e. the opposite of HQCs) and

disrespectful engagement. According to Dutton (2003a), corrosive connections, disrespectful engagement or non-engagement "deplete energy, eating away at employee reserves of motivation and commitment, increasing burnout" (p. 54). Ola described his colleagues as "always being in hurry", which is very different from the act of conveying presence. In addition, Ola's team members did not communicate affirmation, as they failed to actively look for the value in Ola's knowledge: They told him that he would not be able to do anything of value the first ten years. He felt demotivated, considered to quit, and asked to be reassigned. Further, Ola told about a painful experience where he had tried to engage in help seeking. He had asked a colleague if he could show him something on his PC screen but the colleague said, "No, you are not supposed to see this". The colleague covered his PC screen with his arms. In our view, this was an act that displayed a lack of trust in the relationship. Such acts (that display a lack of trust) are sure pathways for building corrosive connections (Dutton, 2003b). When Ola engaged in the help seeking practice he was met with disrespectful engagement. Over time, disrespectful engagement led to corrosive connections between Ola and the other team members. Ola was also prevented from engaging in help giving because the other team members viewed him as an inexperienced trainee. This led to a loss of meaning for Ola. Again, we see the how the quality of relationships plays a significant role in knowledge sharing practices such as help seeking/help giving.

In conclusion, Sara and Kari's stories illustrate how engaging in the knowledge sharing practice of help seeking/help giving is a source of meaningfulness and engagement at work; Ola's story shows how being prevented from engaging in help seeking/help giving can lead to a lack of meaning and engagement at work.

4.6.5 The role of high-quality connections in help seeking/help giving

Having presented the practice of help seeking/help giving, we will now summarize what role HQCs play in this practice. We found strong evidence that HQCs enable the practice of help seeking/help giving, *and* that the practice of help seeking/help giving contributes to building HQCs (see Figure 1). Help seeking/help giving is tightly linked to respectful engagement (conveying presence, effective listening, supportive communication), which is one of the best ways to foster HQCs. Thus, when people engage in this practice HQCs might

develop as a consequence. It is meaningful when someone turns to you for advice; it is a sign of interest, appreciation and openness to new ideas and influences. This might increase the degree of the connectivity in the relationship.

At the same time as the practice of help seeking/help giving can contribute to building HQCs, the practice is sometimes dependent on such connections. When people are in HQCs they can more easily *seek* help from each other. The degree of connectivity and safety inherent in such connections makes it less scary to ask "stupid" questions. Further, people in HQCs can more easily *give* help to each other. The tensility in such connections makes it possible to give help through challenging opinions and views without damaging the relationship.

PART V: DISCUSSION

5.1 Summary of findings

We have presented the findings from a qualitative study investigating how knowledge sharing practices look like when at their best, and what role high-quality connections play in such practices. Based on selected observations and interviews with oil explorers and management consultants in Noroil and Consultus we identified five best practices that the two companies engaged in. We found that knowledge sharing was at its best when (1) the stakes were high and when employees and teams were given a mission (*mobilizing engagement*), (2) when people interacted on informal arenas (*interacting offstage*), (3) when knowledge was made tangible and available for others (*making it tangible*), (4) when people physically sat together (*sharing space*), and (5) when people sought help and gave help to others (*help seeking/help giving*).

The practice of *mobilizing engagement* involved assembling a team on a quest or mission, which was limited in time and included strict deadlines and common goals. The practice of mobilizing engagement meant that that the team would have to do more work at a shorter period of time than usual in order to complete the mission. This led to a sense of urgency and mutual dependency, and team members had to share knowledge more intensively. The practice of *interacting offstage* involved spending time with clients or colleagues in informal arenas. When interacting offstage people met face-to-face, gained knowledge about "who knew what", shared positive emotions and got to know each other more personally. This made knowledge sharing easier. The personal relationships developed in these arenas improved the use of knowledge management systems, because such relationships allowed unwritten contextual and confidential knowledge to be shared. When interacting in informal arenas people also escaped formal role expectations, which allowed them to share ideas and knowledge more freely. The practice of *making it tangible* was a work form that transformed abstract concepts and incomplete ideas into visual representations, or physical objects (e.g. drawings, sketches, photographs, maps, physical models etc.). This practice was concerned with the continuous testing and improvement of half-worked ideas on an early stage of development. When intangible and individually held knowledge was made tangible it became more accessible for others. Additionally, visual representations and physical objects functioned as common

references that allowed the knowledge workers to ground their divergent understandings in the physical world. In this way the practice of making it tangible eased knowledge sharing between different knowledge domains. The practice of *sharing space* included frequent face-to-face interactions and shared time in the office. The physical proximity inherent in this practice enabled people to use gestures, words and physical resources while communicating. Sharing space thus allowed people to share knowledge verbally, non-verbally (gesticulating) and visually (sketching, using objects). The practice of sharing space also created a symbolic perception of equality and commitment to colleagues and clients. Hence, sharing space was central to building and maintaining social relationships at work. Finally, the practice of *help seeking/help giving* was a relational process of question asking and question answering aimed at building trusting relationships, encouraging new combinations of knowledge and creating a climate where there was no such thing as a stupid question. *Seeking help* from more knowledgeable others allowed consultants and oil explorers to get targeted information exactly when they needed it. Further, help seeking contributed to building and revitalizing knowledge so as to maximize its potential for effective use in the moment of creation. *Help giving* meant to proactively trying to understand the other person, being curious, being patient and being nonjudgmental. The practice of help seeking/help giving provided people with a sense of meaningfulness at work: When given help, the help seeker obtained a feeling of being seen; when providing help, the help giver obtained a feeling of being valuable and important.

The empirical analysis revealed that high-quality connections play a decisive role in all of these practices, and that there exists a reciprocal relationship between high-quality connections and each of the five practices. In some cases we discovered that high-quality connections *enabled* the practices. In other cases the practices helped *building* high-quality connections. Thus, we conclude that the five practices both *shape*, and are *shaped by* high-quality connections (see Figure 1). First, we found strong evidence supporting that high-quality connections enable the practices of mobilizing engagement, making it tangible, and help seeking/help giving. Second, we found moderate evidence supporting that high-quality connections enable the practice of interacting offstage. Third, we found strong evidence supporting that the practices of mobilizing engagement, interacting offstage, making it tangible and help seeking/help giving are

contributing in building and developing high-quality connections between people who participate in these practices. Fourth, we found moderate evidence supporting that the practice of sharing space is contributing in building high-quality connections (see Figure 1).

Having summarized our main findings we will now turn to what we see as our main theoretical contributions to the knowledge sharing literature, the positive organizational scholarship tradition and the high-quality connections literature.

5.2 Theoretical contribution to the knowledge sharing literature

This work set out to explore how knowledge sharing practices look like when at their best, and what role high-quality connections play in such practices. The five practices we identified (see Table 3), and the dynamics between these and high-quality connections (see Figure 1), build and extend existing literature on knowledge sharing. Our theoretical contribution to the knowledge sharing literature is twofold: First, the practices more specifically depict how knowledge sharing occurs in real life settings, and how it looks like when at its best. In this way, the five practices serve an important function in improving explanations of the micro-dynamics of knowledge work in organizations (Foss et al., 2010; Perrin, 2012; Wang & Noe, 2010). The five best practices describe how employees in multidisciplinary and complex contexts share and create knowledge: How positive dramas and high-stake projects encourage knowledge sharing to occur; how interacting in informal arenas allows people to meet face-to-face, develop trusting relationships, and how this in turn lowers the barriers for knowledge sharing; how making knowledge tangible and touchable is vital since it allows knowledge workers to ground their divergent understandings in the physical world; how physical proximity allows people to share knowledge verbally, non-verbally (by gesticulating) and visually (when sketching, using objects etc.); and how seeking and giving help to others allow employees to get targeted information exactly when they need it, while at the same time provide a sense of meaningfulness at work. In sum, our first contribution to the knowledge sharing literature has been to respond to calls for more practice-based and qualitative research on knowledge sharing that can provide a rich and in-depth examination of the organizational and interpersonal context in which knowledge sharing occurs (Feldman & Orlikowski,

2011; Foss et al., 2010; Nicolini et al., 2003; Perrin, 2012; Serenko, 2010; Wang & Noe, 2010).

Second, by integrating insights from the knowledge sharing literature and insights from the high-quality connections literature, this master thesis has contributed with a deeper understanding of the reciprocal relationship that exists between knowledge sharing practices and high-quality connections. We have demonstrated that high-quality connections to a large extent determine whether, how and why knowledge is shared, and we have shown that knowledge sharing practices also contribute to the development of high-quality connections. In sum, our second contribution to the knowledge sharing literature has been to demonstrate how high-quality connections are the micro-contexts that provide the most fertile ground for knowledge sharing.

5.3 Theoretical contribution to the positive organizational scholarship

The present thesis also contributes to the growing literature on the positive aspects of working life. By focusing on how knowledge sharing practices look like when at their *best*, we have tried to counterbalance the current focus in organizational research on the negative (Bakker et al., 2008; Bakker & Schaufeli, 2008) by giving equal attention to those factors and processes that produce excellence, thriving and human flourishing within organizations. By examining the conditions and capabilities that create positively deviant behaviour in organizations this work has thus contributed to the positive organizational scholarship movement.

More specifically, the present thesis deepens our understanding of positive relationships at work. As Ragins and Dutton (2007, p. 3) argue, "scholars have yet to understand the dynamics, mechanisms, and processes that generate, nourish, and sustain positive relationships at work". By taking on a practice lens to understand the dynamics between knowledge sharing practices and high-quality connections, the contribution at hand offers a novel way to understand how knowledge sharing practices can generate, nourish and sustain high-quality connections at work.

5.4 Theoretical contribution to the high-quality connections literature

The five practices we have identified (see Table 3), and the dynamics between them and high-quality connections (see Figure 1), also build and extend existing literature on high-quality connections. Our contribution to the high-quality connections literature is twofold: First, we have gained a deeper understanding of how high-quality connections are created in organizations. All of the five knowledge sharing practices identified have the capacity to build high-quality connections (see Figure 1). Thus, we have responded to calls for more research investigating ways to create high-quality relationships (Carmeli et al., 2009).

Second, by integrating the high-quality connections literature with insights from the knowledge sharing literature we have gained a deeper understanding of how high-quality connections create a relational foundation for other capabilities (e.g. knowledge sharing) that are central to generating positive change and enhancing performance of organizations (Carmeli et al., 2009). Our model of the dynamics between high-quality connections and the five knowledge sharing practices offers a detailed description of a reciprocal relationship between high-quality connections and knowledge sharing practices. They both *shape* and are *shaped by* each other. Thus, we have uncovered the micro-moves in interactions that simultaneously increase the quality of connections and enable knowledge sharing.

5.5 Limitations and future research

Our aim was to offer a practice-based perspective on knowledge sharing and high-quality connections in two knowledge-intensive firms where the nature of work is multidisciplinary, project based, and characterized by high intensity and high complexity. Clearly, a significant limitation of this research is that it is mainly based on interviews. Due to confidentiality considerations in both companies we were not allowed to do participant observations of practice. Although we build our analysis on some selected observations (e.g. of the physical working environment, work tools, cantinas, coffee lounges etc.), participant observations would have further strengthened our findings.

A second limitation is the lack of interviews with Consultus' clients. The nature of work in Consultus is tightly linked to building relationships and sharing

knowledge with clients. Although we have touched upon this in our study through the consultants' stories of knowledge sharing and high-quality connections, we have not been able to examine this from the perspective of the client. Thus, more research is needed in order to further determine the dynamics between knowledge sharing and high-quality connections in client-consultant relationships.

A third limitation is that we only have interviewed 19 employees, all embedded in culturally innovative organizations and all focused on relatively difficult, novel, and intensely analytic or staked problems. Thus, there are limitations to how far empirical findings can be generalized. Further research is needed to determine whether the practices we identified are found in other contexts and conditions.

Finally, it should be noted that out of 19 participants, only three were females. The uneven gender balance in the group of informants might have influenced our findings in one way or another. Future research is needed to determine whether factors, such as gender, influence how people engage in the five knowledge sharing practices and to what the extent people engage in building and sustaining high-quality connections.

5.6 Practical implications

An increasing number of professionals rely on multidisciplinary teams to solve knowledge-intensive work-projects and tasks. The findings in this thesis have practical implications for professionals aiming to increase knowledge sharing among their employees and colleagues. First, managers should be aware of the value of mobilizing engagement in the team *(mobilizing engagement)*. Communicating a team mission, with strict deadlines and high stakes can encourage employees to share knowledge intensively. In addition, being part of something larger than oneself will have positive effects on the relationship between team members. Second, managers should provide knowledge workers with access to informal arenas *(interacting offstage)*. In informal arenas people meet face-to-face, and develop more close work relationships, which can ease the sharing of knowledge that is more sensitive. Third, managers will benefit from providing knowledge workers with physical tools, and they should encourage early stage prototyping (*making it tangible*). Physical tools allow employees with different knowledge backgrounds to ground their understandings in the physical

world. By encouraging early testing and prototyping knowledge workers can also reveal and remove potential errors, so that the finished result can be smarter, better and more successful. Additionally, when people make prototypes and visual representations they invite others to collaborate and share ideas. Thus, making it tangible is a social work method that can build positive relationships at work. Fourth, managers should pay attention to office design and location of the workers (*sharing space*). Employees that are expected to share deep knowledge will benefit from being located close to each other, since physical proximity allows people to share knowledge verbally, non-verbally and visually. Further, physical proximity also facilitates daily social interaction and the development of positive relationships at work. Fifth, managers should focus on fostering a culture where both novel and experienced employees are curious and eager to help, and feel safe to ask questions *(help seeking/help giving)*. Finally, an important caveat should be made: The five practices are interrelated and complementary; indeed they are often interwoven, and mutually reinforcing. For instance, the practice of making it tangible can more readily be implemented if people also share space. Managers who aim to increase knowledge sharing among their employees, and foster high-quality connections in their organizations should have this in mind when implementing the five practices.

5.7 Conclusion

> I just want to be close to the people I work with (laughs). I want to see, meet and feel the person. Is that too much to ask for? [Marius, Consultus].
>
> Exploration is to explore, explore is going into the unknown (…). If you are not curious you will hit the wall and you will never improve. Be curious, ask the question of "Why are we wrong?" or "Why are we not able to solve this problem"? [Pablo, Noroil].

Aristotle famously acknowledged that humans are social animals – an insight that in the 20th century got its expression through Heidegger's (1962 [1927]) idea that one of the essential modes of being for a human is that of *being-with others*. We are beings-in-relationships – to be human is to be among other people and to be embedded in social life. To be human is to feel compassion when faced with another person's struggling and to respond with help-giving behaviour (Goetz, Keltner, & Simon-Thomas, 2010). As human beings we also continuously wonder and seek new knowledge about phenomena that exist in our surroundings (Carson, 1965/1998; Heidegger, 1994; Nussbaum, 2001). What comes forward from this

inquiry is that high-quality connections are the micro-contexts that provide the most fertile ground for knowledge sharing. The thesis also reveals that when knowledge is being shared between two people, high-quality connections can emerge as a consequence. Thus, it expands our existing knowledge of the dynamics between high-quality connections and knowledge sharing practices. It opens up the door to see how connections characterized by tensility, high emotional carrying capacity and a high degree of connectivity, create the relational foundation for knowledge sharing in organizations. Understanding knowledge sharing means attending to those facets of relational experience where the currents of human growth are the strongest – where people experience mutual love and appreciation. Accordingly, we will close by the apt words by Joseph Campbell (1988):

> People say that what we're all seeking is a meaning for life. I think that what we're really seeking is an experience of being alive, so that our life experiences on the purely physical plane will have resonance within our innermost being and reality, so that we can actually feel the rapture of being alive (Joseph Campbell, 1988)

Indeed, human beings seek the experience of coming alive. In a high-quality connection people feel more open, competent and alive – that is why such connections are so powerful.

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APPENDICES

Appendix 1: Interview guide Noroil

Phase 1: Initiation and warm up	Initiation and warm up (5 min) ➢ Small talk ➢ Introduction of us ➢ Purpose of study ➢ Informed consent / Confidentiality ➢ Permission to record ➢ Can you please tell us a little bit about yourself and your carrier? ➢ How long have you been working in Noroil? ➢ What is your position /responsibility now? What is your role in the exploration team?	Purpose Initiation and warm up
Phase 2: Eliciting extended storytelling	Eliciting extended storytelling (20 min) ➢ Can you please tell about a successful project where you were involved - What happened? - How were you involved? - Physical setting? Tools/room/visual sharing? ➢ Can you please tell us about an episode where you, together with others made the project move forward? (Can you give examples in this episode where something was especially rewarding, difficult, or surprising in this process?) - What happened - What was your role, your contribution? - What physical tools did your use? - Physical setting? Tools/room/visual sharing? ➢ Think about the same project/episode: Can you tell us more about the relations to the other colleagues involved in the collaboration? - Can you give examples on something you experiences as especially rewarding and challenging in these relations?	Start in the value creating activities, and get stories about ”best practices” Get stories about breakthroughs, knowledge sharing What role does HQC have in knowledge sharing?
Phase 3: Directed questions, comparative	Directed questions, comparative (20 min) ➢ What do you think is the difference of a colleague that you collaborate well with, and a colleague you collaborate especially well with? ➢ What do you see as the difference between a good team, and an extraordinary team? ➢ When did you last feel alive and engaged at work? ➢ Ideal: Imagine you have the power: What would you change in order to achieve an even better collaboration within the tasks you are currently working on? - How do you see the ideal future?	Look for characteristics of HQC
Phase 4: Closure and sharing:	5. Summary (10 min) ➢ Recap findings ➢ Did we understand you correctly? ➢ Is there anything you would like to add?	

Appendix 2: Interview guide Consultus

Fase 1: Innledning - ramme for intervju – løs prat	**Innledning (5 min)** ➢ Løs prat ➢ Introduksjon av oss ➢ Formål med studien ➢ Informert samtykke/konfidensialitet ➢ Tillatelse til å gjøre opptak ➢ Kan du først fortelle litt om deg selv og din karriere? ➢ Hvor lenge har du jobbet i Consultus? ➢ Hva er din stilling/ditt ansvar nå, og hva er din rolle i prosjektet du jobber på?	**Formål** Innledning - ramme for intervju – løs prat
Fase 2: Åpne spørsmål, historiefortelling	**Åpne spørsmål – historiefortelling (20 min)** ➢ Kan du fortelle om et vellykket prosjekt du har vært involvert i her i Consultus? - Hva skjedde? - Hvor mange var dere i teamet? - Hvordan var du involvert? - Brukte dere noen fysiske hjelpemidler? - Hvor/hvordan satt dere (rom)? - Hvor mye/lenge jobbet du med prosjektet – hvordan var tidsaspektet? (tid) ➢ Kan du fortelle om en episode der du sammen med andre fikk prosjektet til å gå fremover – et gjennombrudd, vendepunkt e.l.? (Kan du gi eksempler på noe som du opplevde som spesielt givende, vanskelig, eller overraskende i denne prosessen?) - Hva skjedde? - Hva var din rolle, og ditt bidrag? - Hva var de andre personenes rolle? - Hvilke fysiske hjelpemidler ble brukt? - Fysisk setting? Rom, visuell deling? ➢ Tenk på det samme prosjektet/den samme episoden: Kan du fortelle litt mer om din relasjon til klienten - Kan du gi eksempler på noe som du opplevde som spesielt givende eller utfordrende i denne relasjonen? - Hvordan gikk du frem for å skape den relasjonen? ➢ Tenk på det samme prosjektet/den samme episoden: Kan du fortelle litt mer om din relasjon til de andre kollegaene dine som var involvert i dette samarbeidet?	Starte i de verdiskapende aktiviteter – få tak i historier om "best practices" Få historier om gjennombrudd, kunnskapsdeling i prosjekter Hvilken rolle spiller relasjoner/ HQC i kunnskapsdeling? Få innsikt i praksiser som kan skape HQC
Fase 3: Fokuserte spørsmål, komparative spørsmål	**Fokuserte, komparative spørsmål (20 min)** ➢ Hva mener du er forskjellen på en kollega du samarbeider greit med og en kollega du samarbeider spesielt godt med? ➢ Hva mener du er forskjellen på en klient du samarbeider greit med og en klient du samarbeider spesielt godt med? ➢ Hva tenker du er forskjellen på et godt og et ekstraordinært team? - Hvor mange bør det være i teamet? ➢ Når følte du sist at du var levende og engasjert på jobb? ➢ Idealtilstand: Se for deg at du har all makt: Hva ville du endret på i Consultus for å få til et enda bedre samarbeid innenfor de oppgavene du jobber med nå?	Se etter kjennetegn på HQC/LQC Se etter kunnskapsdeling/HQC i team Få historier om meningsfullhet på jobb
Fase 4: Avslutning, tilbakeblikk, dele tolkninger	**5. Oppsummering (10 min)** ➢ Oppsummere funn ➢ Har vi forstått deg riktig? ➢ Er det noe du vil legge til?	

Appendix 3: Coding of data into first-order and second-order concepts

First-order concepts	Second-order concepts or practices of knowledge sharing
Drama Time pressure Against all odds High-risk projects Outside ordinary praxis Mutual dependency in the team	Mobilizing engagement
Informal arenas Informal communication Network, get to know each other Short meetings	Interacting offstage
Physical tools (e.g. screens, white boards, maps etc.) Early prototyping Sharing ideas at an early stage Experimenting, pilot studies Knowledge objects	Making it tangible
Physical surroundings Office spaces Sit at the office of the client	Sharing space
Openness Ask questions, curiosity Listen to others, empathy “Glue”, knowledge integration Feeling of being needed Meaningful, caring relationships Feedback, recognition Therapeutic relations Ownership, anchoring ideas	Help seeking/help giving

Appendix 4: Empirical evidence

Practice 1: Mobilizing engagement

Drama, strict deadlines and high pace creates mutual dependency	In Project Rogstad we did the job faster. They wanted us to do that job in a year, when these things use to be done in three years, so they needed to put more people into it. And then we needed to collaborate. Otherwise we would never achieve the goals in a year time. They called all the experts in to work. [Pablo, Noroil]. Project Rogstad has always been an unusual project. Generally you do the exploration, you do the discovery, and you hand it over to the early development and they appraise the structure. But in this project all the appraisal has been done by exploration, and it has been done at an extremely high pace, so we were in the condition that we were (...) mapping other prospects, planning a new well, drilling the well and evaluating the well before – all at the same time. And these are general tasks that you actually take one at a time. So there was a huge workload. I think that everyone of us, for maybe a year, put anything between 5 to 20 hours overtime a weak, so it was a very hectic moment. And information was coming in continuously (...). You had really to find the person, and (laughs) almost grab them in the morning and say: "What's going on? What is happening?" [Marco, Noroil]. (In Project Rogstad) we decided, both a competitor and Noroil, to go for the eastern side, so we planned two different wells. And at the time we were a team of four to five people with different backgrounds. There were some people that had over 10 years of experience within exploration and within Noroil. (...) We had geophysicists, sedimentologists, someone that had a more wide line login interpretation skills, and I think we were really well integrated. (...)You are able to do a much better job if you get input also from other people and other disciplines. Every one of us was working on top of what was the progressed experience, (...) none one of us can really claim all the ship for something specific [Marco, Noroil] Collaboration works better when people are task focused. If people have got a task to do with a deadline they do what is required to meet it. If that means getting help from other people, they are motivated to do it. In exploration things are often so far in advance that there is no motivation to do things quickly. We work in a project now where we have to, like, book some volumes by the end of the year. We had a big session at the beginning on what the task was, so we were very clear about it, because if we got it wrong we would miss our deadline. That was very important, to have that clarity. So then, people have been working very hard, because we know we have to do this. We meet regularly, and we describe what tasks we have to do this week. [Brad, Noroil]. We had short time. The challenge was to train hundreds of end users within the final deadline. (...) It is during those times when you feel pressured, when the whole project is pressured, that is when you see how things really work. Day-to-day things are usually just fine. But when people start feeling the pressure of a deadline they start acting more like themselves, maybe. More genuine. Then you get a feeling of how things *really* are. (...) More intense. Longer days. More evenings. You can feel the dependence to your team-members. You have your part, and you are dependent on the others in your team to deliver their part, in order to reach the finishing line. No one can do this alone. [Filip, Consultus].
When something is at stake, people become engaged and feel alive at work	*[Brad talks about a time he felt alive, or engaged in his work]:* Noroil is a huge organization, and it does not move that quickly. (...) But we are in a position now where the field that we are drilling is under development and there are some time-critical things going on in respect to choosing development scenarios. It sort of means that the work that we do drilling the wells has to be speeded up in a way. We have for instance identified something like an upside potential to this discovery. And it is something that is not approved yet. It may not come to anything. But the point is that when we do that, we know that we have the potential to drill it quite quickly, and so that makes you feel really alive. And then we know that in order to drill it quickly, we have to fix these deadlines. And then we have to really have to dig into the details, and get absolute clarity of what we are actually doing here. We have been discussing geology recently, and getting into the data and getting sort technical sort type of discussion. And that makes me really engaged. Because I know that if we get things right, we will drill this thing next year. And that is not often you can say that - That you know that the work you do right now have an impact in a six month time. In exploration our time scales are usually many years long. So that is an example. It more like getting back to the geology. Looking at the data. Doing the sort of work that we are trained to do that we did at University. That type of thing, knowing that it will impact something tomorrow. [Brad, Noroil]. The most exciting is... not just working from 8-4, [but] when you go into a bubble. You lose yourself in the project. It is exciting. That is when you get the good results [Fredrik, Noroil]. (I feel engaged) when we go together as a team from the beginning to the end. We had an example of a deeper target that we started to look at. After Rogstad we got the instruction that we had to look for grabens. We discovered a great graben! People have seen it before, but... or the target has been there, but not the deeper target. And it was crazy! We discovered it and got the opportunity to drill. High risk, but really exciting! He started to interpret it, I started to make geox volumes, and power points and we got it finished in 3-4 weeks. It went 6 weeks from we got the idea until we were through the QC meetings. After just 6 weeks everything was in place. It was a completely new migration. I must say, *these* experiences, I want more of that. [Kari, Noroil].

	(...) The project was going over a few weeks or a month and it was a lot of work in that month and a lot of time pressure but that is why the method worked so good because we knew we only have that much time and we need to make this happen, and that made a very positive atmosphere in the group. (...) I quite like to be under time pressure, because it gives you a sort of drive I think it's even motivating, like you feel we have to make this happen. [Sara, Noroil]. My boss suddenly came in and said that we need an evaluation because we want to drill at this side. Then we did the whole evaluation in three days (laughs), and we got YES. In this project I was included in a confidential project where things happened really fast. I was so happy, because I realized that "OK, now they trust me so much that they are willing to give me this job". [Ola, Noroil].
Time pressure and stress leads to prosocial behaviour, social bonding and the development of HQCs	The way I like to work is connected to time pressure; I like time pressure. With other things no, I don't like when things don't go very smooth. (...) I mean it depends a bit on the sort of time pressure, if it's pressure from your boss, because he wants to deliver to his boss quicker then it puts a lot of pressure on you. I didn't have that my self but I heard from another group they had that problem, and that's very negative, I would think. But since it was a deadline for us that came from the authorities it was more positive, it depends on the reason for the time pressure. [Sara, Noroil]. I must say that we were good friends, we are still good friends, and we have very open discussions. I think that has been the key, going through some harder times. The hard times were especially those times when we were really, extremely stressed, because of the big amount of overtime. (...) We had a very good collaboration. We were really a team in the sense that we enjoyed to work with each other, we cared for each other, which is very good. I don't think through time, none of us has been set aside. Of course, through time there has been some misunderstandings, and some small conflicts, but I think that it is the sort of conflicts you have also with very close friends sometimes. (...) You have different point-of-views and sometimes you don't agree and you have to discuss it. But it has always been very civilized, and that made it easier to overcome different opinions. (...) So I think that we have some discussions in meetings and so on, and it was ending there – the same day and the morning after it is like nothing had happened. So I think it is mainly because of the respect that we have for each other. [Marco, Noroil]. You start talking together like friends. You bond more. And when you work long hours... Well, I don't know if it is because you get so tired - but the guards go down. We had a lot of dinners together, so you get the social aspect. And suddenly you know what everyone in the team does: because those few hours you have to yourself (when you are not at work), you share those too. But when you go home at four o'clock everyday, you don't know what your colleagues do (in their spare time). But when you go home at eight, and then meet on Sundays too (...) yes, you do get tired but you get so close to the people on your team. We had conversations about private stuff too. When you work long hours, talking about private stuff is unavoidable. Everyone needs coffee breaks. And we learned about each others personalities. You laugh together. [Vetle, Consultus]. Collaboration is best when you are in a situation where you want to achieve something in a short period of time [Even, Consultus]. When you have something in common, when you share history, when you are a bit vulnerable together - that is a good foundation for social bonding [Filip, Consultus]

Practice 2: Interacting offstage

To have met colleagues in an informal arena makes it easier to share knowledge	The client was clueless on how to make the training strategy in such a short time. Since I had been in the US (the two-week training course) I had started to get an overview of what different people in Consultus work with. And I knew about one person who had worked with the same task; make a training strategy in a short period of time. So I called her and said: "Ok. I have this case, and I don't know how to do it. Do you have any information to share, or any advice for me?". And I was so impressed! I sent an email late afternoon in Norway, and the day after I had a reply from the US, with presentations and recommendations. So in this way that relation was important. And it is important also in a different way, because when you are new in a job you are insecure and you think "how do I do this? I don't have a clue!". But knowing people allows you to say " I have a challenge, how do I do this? What would you do?". And it is so much easier when you know someone, and, ah, sorry to say but when you have gone out together. Because then it is like "Ok, we know each other", and I can make a fool of myself because we have been to parties.. (...). About the relationship with my american colleague. I was in her workgroup and we had good chemistry. Some people you just get along with instantly. We were at the same age, same background. And we got to know each other during the evenings. So it was very easy to email her. (...) It is easier to send an email to someone if I know who they are. Then I can write "Hi. It was great meeting you the other day. By the way, I was wondering, can you help me with this and that?". [Ida, Consultus]. *[Even talks about how a client went from being resistant to engaged]:* You go to meetings, and you fool around. You come early to work, you stay late at work. Coffee, lunch, cakes on Fridays. And then all the stories come out, and people start to understand who you are. "Oh, you did sports?", "You went out this weekend?", "Where do you usually go out?" etc. You know. You get personal. And that changes the relationship. [Even, Consultus].

	[Sverre talks about who he collaborates the best with]: We had a project dinner last Friday where we went out to eat and then went out to party. And they are just great people. People you can spend time with on your spare time. So that matters a lot. And they are competent too! And that helps. So it's that combination of competence and getting along personally. [Sverre, Consultus]. [Vetle on how meeting someone on an informal arena made it easier to communicate electronically]. (Electronic communication is) bad for social stuff. Two weeks ago I met this person at a seminar. And then he said "Hello Vetle!" And I was like "What? Who are you?" And then I realize it's the guy I have been talking with for six months on Lync. (...) Last year we had this kick-off meeting. We were all gathered for a Christmas dinner. Half of it was work-related, half social. And I could just feel it afterwards: Just having seen them (...) made it more comfortable to talk with them on the communicator. [Vetle, Consultus]. *[Pablo talks about the relation with the people he collaborates best with]*. It is obvious that the people I have a relationship outside work I collaborate better with. I think that is very obvious. For example, I have friends that I go climbing with, and I have beers with, and come home… We already have a relationship independent of work, so no matter if we are tough with each other at work, or direct, it does not matter because I do not need to be accepted at work, - I am already accepted in my real life. So then I can be tough. But other people, - the only relationship we have is through work. So for them, maybe, some kind of barrier because you do not have this extra relationship outside work. [Pablo, Noroil].
Trusting personal relationships can give access to contextual information	Sometimes the knowledge management systems don't work because it is difficult to share information worldwide when you have to protect the client. It is your job to ensure that no one recognizes the systems and the processes you have designed for the client. Because of the confidentiality agreement we have to impose restrictions to the information you share in a global company, such as Consultus. However, what makes it possible, though, is the personal relation and the trust you have in relationships with some colleagues. For instance, when my boss know someone who is an expert on this topic in the US, it is easy to get access to the knowledge. But if I have to contact this specialist in the US, who has shared this experience in the IT system (without knowing him), it is more difficult. The contextual information is difficult to share without having a personal relationship. When you have a personal relationship you are in control. The other person knows that if I misuse the information, it is me who is the responsible one. [Tobias, Consultus]. *[Viktor on how he got sensitive information on informal settings due to his long-term trusting relationship with the client]*. When we were done with the formal program we were up late and then people began talking about what they *really* cared about. And that was that a competitor was starting to capture pieces of their market share, and they were scared that they could not match that model. *(Viktor used this information to present a solution to the administration of the client)* When I presented my solution to the client, and asked: "Is this a fair representation of your problem?", they were speechless and said "How did you managed to do this?" and I answered "Well, I listened to you" (laughs). [Viktor, Consultus]. *[Filip talks about what he finds as most challenging in the relationships with his clients]:* You can send a thousand emails. But it will not help. When you start calling, it's a start. When you actually go over to someone and talks with them, and if you have a personal relationship, it is so much easier to get their attention. If you just have a name, and send an email it's very hard. You need to have a relation to them in order to get insight into their insight. [Filip, Consultus].
Informal arenas are back stage arenas, which lower the "barriers" and allows for the sharing of all types of knowledge	The clue is that it needs to happen in an informal arena. Everything always have to make sense, it should be called a seminar, and be so nice, and then it should be presented to someone else. But it is a lot easier... The best ideas are created in the morning, when you are out here drinking coffee. You just think of an idea: "maybe we should take a look at this?" You cannot force creativity. It is something that occurs inside. (...) (On informal arenas) the barriers are lower. You can propose things that.... One says that there is no such thing as a stupid question, but of course there is. If you have a formal, arrogant setting - as I felt when I worked in another location.... It was like you got frowned upon for proposing something new, well, then you stop proposing. If that barrier is not there you have so much more to work with. [Torgeir, Noroil]. Maybe we should be better at hang around be the coffee lounge and throw out problems we have. Perhaps it is easier in such a setting, a "technology coffee": If someone has a small problem, put it on the table and invite the persons that are in your surroundings. Or in the team meetings, if someone has a problem, we could be better at that. (...) We should have a couch in the coffee lounge, so that people get closer. Have you noticed that when people sit in a couch, it is easier to say "there is room for you here". And then you start communicating differently. You get closer, and its not like you are on the edge of your seat, which just makes it easier to leave. I can sit (in the couch) for a long time. We should have a couch in the coffee lounge. That would contribute to many creative solutions. (...). This coffee lounge could be better. We can take away these barstools and put in three couches. You can just imagine what that would lead to! Now we are up against the wall, two here and two there, and nobody can see each other. With the couches people would actually start talking. So I think that is important, that people can meet down here, and that there is room for more than six people. [Kari, Noroil]. I could picture having some sort of forum of silly ideas. Where we got together people from

	different groups, and every Thursday we could say: "Who has the most outrageous idea?". There would be no limit to what people would propose, right? There could be a prize for the most hilarious prospect of the week. You know, then people could propose: "why not drill here?". Things are often just pushed into a team site, or a power point in order to be presented to someone that knows even more. Their opinion has to be heard first. At the end of the day, the barrier is too high. The filtering of ideas is too rigid! An example is the large discovery at project Rogstad. It is a prime example on how you have these "truths": "No, there is no use in drilling here, there is no way the oil has migrated in there". And then they drill, and they make the biggest discovery - right next to the place they have been drilling for years! It shows that sometimes you can't give a shit about accepted truths. [Torgeir, Noroil]. *[Brad talks about how he gets a project move forward, and how informal arenas are used to warm up important decision makers, and keep them continuously informed]:* I think the biggest herd we have to get over is getting approval or agreement on things from the management. (...) It's better to just drag them in on an informal basis, so that they are aware of what is going on, and then get them involved in not just the decision, but also the recommendations. Because they decide what to do in a way for big decisions. Warm them up (...). Talk to them on a daily basis. Make sure they are aware of what is going on. (...) It's more like a continuous engagement type of thing. If you talk to people over a coffee, in the corridor. [Brad, Noroil]. Coffee breaks are useful to inform about what you are doing. [Sara, Noroil]. I actually walked around. I love to do that because of my curiosity, because I want to know more. (...) Sometimes it was just 10 minutes, sometimes half an hour up to an hour. Sometimes we just said, "oh let's take a coffee together", and then we spoke about it. It was sometimes two or three persons. It depends. We didn't actually call for any meeting. And if I went upstairs and they were busy, I was instead going the day after or they were coming down to see me. And I think that was really good and efficient. [Marco, Noroil]. *[Pablo about what he would do if he had all power]:* I would do more workshops, and fewer power points. So proper brainstorming and thinking. Not presenting. We present too much, and we think little. So that's my conclusion. (...) Having a place where we can share ideas and talk, and not just do meetings just to present things. I think for example that these meetings, which were very productive. Because we were open to say things, discuss things openly, without thinking on what I need to present to this man, what is the output or, we were like free to discuss things. You know, sometimes when you present something, you are present that to these persons, that to this kind of meeting, so you shape the presentation a little bit to the buyer, the guy who you are going to present it to – and I don't think that is creative. Then you restrict the brainstorming or thinking to a specific meeting. Then you narrow it a little bit, you know. I am not going to talk about this, and I am not going to discuss about that right now. But when you create this open come everything. And have a space to do that. [Pablo, Noroil]. It's important that the managers don't travel too much. I want leaders who are present. (...) It's so important that they take 15 minutes at the coffee lounge every now and then [Karl, Noroil].

Practice 3: Making it tangible

Prototyping is about making knowledge and ideas tangible; it is about testing and retesting potential scenarios in order to make proper adjustments. It is about inviting others to participate and learn.	*[Ida about how she uses pilots in her work]:* We were supposed to design a training strategy. When we had discussed things halfway, and decided "this thing here should look like this, and this thing here should be like that", we conducted a lot of pilots. When we had decided to go for a solution we invited a customer in the bank to test the solution. We asked the customer "does this work?", and then we discussed it afterwards. It could be simple things such as "did you see the picture?", "did you hear the sound?", or "was the content adjusted to your needs?". Then you get a clear indication on whether things are working according to the plan. (...) In this project we continuously did tests and pilots. After being a consultant for some time, I have learned to appreciate pilots and early drafts. As a student I worked mostly by myself, and when I handed in a term paper I wanted it to be perfect right away. I wanted an A. But what I have learned at work is the value of an early draft! If you just manage to get some thoughts down on paper and think, "ok, this is how I think it will be", and then discuss it with a colleague, then you get so many ideas back! Ideas you might not have gotten if you were sitting by yourself, thinking: "this must be perfect". [Ida, Consultus]. (In an early phase of a project) we make some hypotheses. We try to get a foundation of what we believe is the right solution for the customer and then we gradually test it [Tobias, Consultus]. I used a power point to make some suggestions, and I sent it to the client. It was more like a draft of what I believed we had to work on the following week. (...) It was a conversation I had to test if my assumptions were right. The conversation was really about "what is the situation", "what is this business plan all about". Is it about getting the structure right, or the roles? "What do you feel? And then she shared her thoughts with me, and while she was talking I wrote things down. After that I thought of different solutions and tried to formulate a plan for the week. [Even, Consultus]. Drawing, telling and explaining things is often easier than just discussing. People are good at standing, using the white board, and that is important. It's so important to make things concrete. (...)

	it's not enough to explain in words. I see how important it is to visualize and show things [Kari, Noroil]. *Pablo talks about what he would do if he had all power to increase collaboration]:* I would do more meetings like that, and less power points. So proper brainstorming and thinking. Not presenting. We present too much, and we think little. So that's my conclusion. (...) Having a place where we can share ideas and talk, and not just do meetings just to present things. I think for example that these meetings were very productive. Because we were open to say things, discuss things openly, without thinking on what I need to present to this man, what is the output or, we were like free to discuss things. You know, sometimes when you present something, you are present that to these persons, that to this kind of meeting, so you shape the presentation a little bit to the buyer, the guy who you are going to present it to – and I don't think that is creative. Then you restrict the brainstorming or thinking to a specific meeting. Then you narrow it a little bit, you know. I am not going to talk about this, and I am not going to discuss about that right now. But when you create this open come everything. And have a space to do that. [Pablo, Noroil].
Drawings, sketches and other physical objects stimulates the circular interaction between latent and empirical knowledge	The way the room is designed is very important. (...). You need a notepad where you can sketch opportunities, sketch ideas - and walls. A wall where you can hang things. And whiteboards. It is about getting the ideas up and out there visually. Because, we may not be that good at describing things in words in our industry. (...) If you speak and draw at the same time, then you get double impact. (...) Speaking, drawing, making mistakes - people pay more attention to that than in a glossy presentation where everything is already decided. (...) It's about others being able to take your pen. That the pen is passed around. [Fredrik, Noroil]. *[Even explains how he arrived at a deep understanding of what was the client's problem]*: It's hard to say "when the moment comes". But for example yesterday (...) it was perhaps two hours before the meeting. I put up - I like to doodle - and I put up the business plan, and then I started to sketch out workflows. And then I sketched all the roles and I started to thing "how does the reporting structure and the coordination structure look like? What could be better" And then it came to me. Just by sitting and drawing and sketching. [Even, Consultus]
Physical objects function as "boundary objects" which mediate between different knowledge domains	What we do in exploration is about collaboration, but it is all about creativity. And they are sort of different. So you need to collaborate in the right way in order to be creative. Because it is all about coming up with ideas, and maturing those ideas. So we like to sit in environments where we have magnetic walls we can stick posters on. (...) But now we sit at desks that are designed for accountants. And that is not suitable for collaboration and creativity. So I would change that! (...) We like mac tables. We like big desks, two large screens. You see, Google have poles from the second floor, and beanbags… You know, that is one extreme, but as an explorations and geologist you should be closer to that spectrum, more than "everyone is in a box" sort of thing. (...) You need to have the right, yeah, small team rooms, things on the walls. (...) It was better because we had these things on the walls. It happens automatically, if you have the right props, the right overview. Seismic lines, or the right maps on the wall that give the overview on everything. So, that when someone is explaining, trying to explain an idea that they have been working on in their individual computer, they can just point to a map and that sort of thing enters. We have small team rooms (...) with two big screens and a whiteboard – that is very important, so that you can draw your ideas. They work quite well. [Brad]. *[Sara talks about challenges with confidential information and rooms]:* Challenges, hm, well one of the biggest was that in the beginning we were not aloud to hang up things, the work we did was very confidential obviously, but the doors were open, but in the process they closed the doors and changed the security access so we could hang up the maps and then we could stand around them and just discuss. Or it's like when you do seismic interpretation it's always hard to visualize things so if you don't have the maps, and you say "do you remember this blob up in the north?" and they say "off course I don't remember", so you need to map it and then you can point to it quickly otherwise you need to open other software and find the layers and then point. (...) It's easier if you have a certain amount of maps and things you can draw on to communicate, it really helps the communication. Because we all worked in different areas, we didn't do the same area, we just helped each other with our areas basically. (...) I work usually as a geologist but when there is a question related to my specialization I would be the one who handles it, but that was just a project that didn't have anything to do with that, so we had actually the same background. And the challenge there was, it's all about geometries that you seen on the seismic and if you are not the one who mapped it, it will be tricky to remember where on the bigger picture you are, because you need to know the falls and the geology, but also have the geometry of the certain feature you see on the seismic to see how it looks like, and that you can only see if you take different cross-sections or you draw a 3D image and other visualization things. I would think its more important with visualizations in this context than in my specialty, usually because its not so much about geometries in bas modelling but it's more about process, I mean I always draw when I explain things but I tend to draw less when I explain base modelling related questions. [Sara, Noroil]
Prototypes opens for action and creativity, and strengthen the degree of connectivity in	I do this (send a presentation with an issue tree) to get feedback on my understanding of the problem. (...) One thing that I like to do, especially after workshops, is to make a draft. The sooner you can make a draft of the product you are supposed to deliver, a draft that looks done, but might include several empty boxes etc., the better. (...) This is one of the most effective practices I use. Because it has several effects. Firstly, people are not used to get a draft the day after. Thus, only giving the client a draft is positive! They are nearly shocked by having something concrete the day after something has been discussed. [Viktor, Consultus].

the relation	We always run pilots (if we work with implementing a technical solution). When you get the results, when you get feedback on "this works", it gives the team an extra boost [Ida, Consultus]
Prototyping can be a vulnerable process and in some situation demand HQCs	(...) It's a little scary. I think everyone has a need to feel competent. That they do a good job, and that they come up with good ideas. If you are unsure of "is this what we thought of?" or "is this the best way to go" then you have to spar with someone. So it's a little scary. You risk to hear that " this is crap". But to be honest, that has never happened to me. (..). The better you know a person, the easier it is to be honest. And the easier it is to trust that the person you are talking with is being sincere with you. I usually spend time bouncing ideas and share drafts with people I feel like I have a good relation with. [Ida, Consultus]. You have a different way of talking to your colleagues depending on age and gender, so I felt that the cooperation between the three girls were just focused on the goal and we just wanted to reach the goal and it didn't matter who did what work we were just working completely together. But with other people I've sometimes had the feeling that…for instance, I would do something and I would tell my colleague "listen, I did this and that, and I think it might work" and then he went to my boss and said "we did this and that", and basically it was mine idea (laughs). I mean we are a team, so ok, but you didn't do anything (laughing). I've only had that ones, so next time I would be a bit more careful. Whereas with the girls it was not important at all whose idea it was, it was the group. And I think the way you talk is different if you have an older colleague because you don't chit chat that much, you would maybe try to pre-sort your stupid ideas out of the ideas you think might work, might be a bit more careful, whereas with the girls I was not afraid to just come with any idea, also because the atmosphere was very positive. It doesn't mean that other things don't work, but that was just an example of the most open environment I have worked in until now. [Sara, Noroil].

Practice 4: Sharing space

Physical proximity might create stronger relationships between co-workers	A great consultant is never in the office [Viktor, Consultus]. Being located at the client's office is part of our policy. To sit together with the client, stand in their shoes, and understand their problems is our job. And it's related to ownership. We want that the client feels ownership of the solutions we recommend. [Martin, Consultus]. We sit together with the client. That is one of the things that create a good client-consultant relationship. We try to avoid the impression "we are from Consultus, and you are the client", and rather work together as *one* team. (...) The most important thing in the initial phase of a project is to get to know each other. (...) It can be a little bit like "us and them" in the beginning. (...) So when we are sitting together in office spaces (...) we are trying to become like one. [Filip, Consultus]. (...) We would all rather be in one room with a door. So that we are together [Brad, Noroil]. When you invite people to a workshop, when you make these posters and everything... It's so effective! It's a perfect way of getting to know other colleagues. To find out "who works where?" [Kari, Noroil].
Physical proximity enables the sharing of complex knowledge	It's important to share space because you get access to more information. You get access to the interesting things that happen in the company. (...) I recently overheard something that one of the employees who worked in the office talked about. It was a telephone conversation. And this helped me afterwards. (...) When you sit close to the client it is much easier to get information about frustrations and to develop a closer relationship. You become the trusted advisor. (...) I feel like physical proximity is what is needed. It gives a totally different form of knowledge transfer, participation and engagement. And in a company that is so concerned about travel costs, I mean, they have the best intentions about having telepresence equipment etc. (...). Get everyone together! It would do so much for competence transfer, and for collaboration. (...) I just want to be close to the people I work with (laughs). I want to see, meet and feel the person. [Marius, Consultus]. I now sit in a different wing of the building. And I don't receive the flow of information that would make my job much better. And there is this problem. I actually don't know how to solve it, because it is not a matter of will, because they are very willing to share information, and I am very willing to discuss with them, it is just that the flow in a way is interrupted, or baffled, not interrupted. (...) In project Rogstad, I was sort of responsible for establishing this flow of communication with the people that were doing the special studies. I went to see them maybe not every day, but every second day. I was also updating them of what was our current knowledge, so that they were able to steer their special analyses towards our most recent understanding. (...) We had four or five different special studies going on, and I was going to see the people that actually were working upstairs nearly everyday. (...) And I just sat with them and they were updating me about their results, and then I was saying: "You know, now we have drilled the reservoir section, we found ten meters of sand, and from what I see I think that this is a beach. What do you think? Is it consistent with your data? Is there any other sort of analysis that you suggest - (explaining) because they are the experts, that we should do in order to confirm or exclude?" In that way there were not a gain in just doing their own work delivering to us, but they were continuously in the loop and that made them more a part of our team than just a provider of a service. (...) (In oil exploration) We deal mostly with interpretation. And you see something and you interpret it, but sometimes there is more

	than one interpretation. Most of the time it is more than one possible interpretation. And if you can narrow down the number of interpretations by using different disciplines, which means speaking with other people, that is very beneficial for you. Because otherwise you might choose one interpretation, and discard all the rest, and then it is the not relevant one. [Marco, Noroil]. I actually walked around. I love to do that because of my curiosity, because I want to know more. Sometimes it was just 10 minutes, sometimes half an hour up to an hour. Sometimes we just said, "oh let's take a coffee together", and then we spoke about it. I think that was really good and efficient. [Marco, Noroil]. Don't sit at your desk all the time. If you have people that are outside of your specific group or team, but they are working on the same project, and you want them to deliver high quality work, you need to keep them in a continuous loop of information. So they don't go on for their own. [Marco, Noroil]. I think people are too much stuck on their desk, behind their computer. So one floor is a very large barrier (to knowledge sharing) [Fredrik, Noroil].
Physical proximity enables people to use both gestures, words and physical resources when sharing knowledge	You need big rooms, with big screens, 3-4 meters. So that everyone can sit together and look at things at the same time. (...) It's called seismic labs. A meeting room like this, but everyone has their own desk with their own screens. The screens are linked. So that if we work on the same thing (demonstrates by pointing to his screen and "plays"): "I don't get this", then we can put it on the big screen, take two minutes and discuss that part. If you have unanswered questions and problems, you can easily discuss it with the other team members. That makes it easy to discuss internally. That is very, very important. And that is something that is evident now that we have moved. We have been placed in separate offices, although no one wants that. They are too small. It is a huge step back. We want to sit together; we want to discuss each other's problems. We want to *see* what the others are doing. Right now, I do not have control on what people are doing. I have to check all the time, and ask that they are doing. Instead of things just being resolved easily by sitting together in concentrated workrooms (...). I am currently in an isolated office. The others are in two different team-rooms. It is not optimal at all. I am running between the rooms all the time, and they are running to me. We are losing the shared feeling of working towards something together. So how we are seated is a very relevant issue. [Per, Noroil]. Its about being able to gesticulate. To underline. Not saying. You end up using words to make points when you would normally just move your arms to make the same point. [Vetle, Consultus].
Physical proximity underpins the practice of making it tangible	We had one (successful) project where we were three girls working on seismic interpretation and we were sitting next to each other so we had the backs to each other and that was really good because then we always talked, and if we saw something on the seismic we just turned around and said "ah look at this" and "what do you think of this?" and I think that was one of the most effective methods because none of us felt they would disturb the other one and we were just blurring out ides, we made posters, and noted down ideas, and I think that was probably the best collaboration I've had so far. [Sara, Noroil]

Practice 5: Help seeking/help giving

Asking and answering questions; getting targeted information when needed; and how the help givers characteristics matter	Fredrik gives the best advice. (...) He is the definition of a supporting colleague. He is nailing stuff into the nitty gritty detail. He asks all the "why-questions", and it feels really good when somebody asks. (...) (...) We involve at an early stage all the people that can contribute and help us. And that is especially helpful, because then you don't have to reinvent the wheel every time. [Kari, Noroil]. If I invite you to say something... What you will tell me is valuable. It is not wrong. There will always be a probability that what you tell me is correct. And i think that is important. It is ok to say something "stupid". That is open communication. (...). If I try to get something out of someone, (...). People need to have the answer themselves.(...) It is important that they figure it out on their own, rather than to have me tell them right away (...). It may be time consuming, but I believe that people get more out of that. Instead of you telling them arrogantly, "this is the way it is" (...) I believe that breakthroughs (in exploration) happen when you combine people who have deep knowledge within an area with new people that don't have this knowledge. If these inexperienced new people have the right attitude, they will ask a lot of questions, "stupid" questions. And then the people with the deep knowledge, they may think that they have the answers to everything, but no they don't. Suddenly they discover a connection they were not aware of. [Fredrik, Noroil]. [Sara talks about a colleague that made a mistake and went away. When he comes home she talks to him].(...) When he came back I asked him about it, and he said he failed to do this one step. The thing is that he has never been thought to do that. What I in *my* group was really good mentoring. We sat down and they said, "these are the steps, this is what you need" and they explained me everything and I was free to ask questions. And no one has ever done that with him, so I could see that he had holes in his knowledge: he didn't go and ask any questions (...) and it led to huge mistakes in the end (...). I think mentoring is one of the important points for newcomers, that you really have someone that feels responsible for your knowledge. (...) Someone needs to give you permission to have holes in your knowledge. Because for that guy the learning curve was very slow

	because he always need to reach the point "ok, I really have to ask now". Whereas my curve was really steep. [Sara, Noroil]. We were in the same office, so we were working closely. I used the vice project-manager for discussion, and I feel safe with her. I asked her "I am thinking about doing this, what do you thing?" "Oh, this phone call will be uncomfortable - how should I talk to him?" We were continuously sparring, and that was very valuable for me. Having someone tell you "It will work out, you have full control"! That is very comfortable. She (the vice project manager) was more experienced than me. She was very clear about her goals, at the same time as she was very approachable (...). So I could ask as much as I wanted without feeling "Now I need to stop asking". And that was vey reassuring. In the beginning you have many questions, and after a while you don't. But it is great to know "Ok, she is there and I can ask her". [Ida, Consultus] In exploration I think curiosity is the first thing. If you are not curious you will hit a wall and you will never improve. (…) Some people don't get it, they just (...) yeah. "I do the job. And I do a very good job". And that is it. But for exploring you need to be curious because you go to the unknown. [Pablo, Noroil]. *[Pablo talks about the Rogstad project]:* I think that it really worked this time because the majority of the people were curious and willing to collaborate. So it happens that we were a group of people all of us were listening and trying to discuss things. [Pablo, Noroil]. *[Ida's talks about how she gets a team to function well]:* I think I just enjoy people in general. So I think it is exiting to find out who the people I am working with are. I know things about them, like, are they married? Do they have kids? Where do they live? Small things, but I thing that it moves the relationship to a different level. [Ida, Consultus]. *[Martin talks about what he does when he needs new information]:* I personally have a low threshold to ask for help. Compared to when you work on the floor, and you might have work tasks that you are used to you get assignments here that are completely different than what you are used to. (...) So you start on scratch And then I start asking people I knew from earlier projects: "What do you know about this?"? I do this on e-mail or chat - very easy. (In my last project) I asked six people form Norway that I already know, and that I know work on similar issues, and I got an answer back within the hour with suggestions to what I could use, tips (...). That made the job so much easier. [Martin, Consultus].
Providing a "helping relationship" is important for trust and knowledge sharing between colleagues, and between consultants and clients	I have heard many times from my project manager that the client might fool you. The client will say "no, we know what the problem is, we can solve it". But then the problem is actually something completely different. (...) *(What do you need in order to understand what the clients real problem is?*): Often it's about getting the hard facts and numbers. (...) And then it is really important to have respect for the people that are in the situation, the ones that are the most affected. The people with the most knowledge. (...) In the last project we had very limited information, and we needed to interview and get information from the people that were actually doing the work. Then we basically just sat down and listened to how they were working on things day-to-day. We tried to find out the problems and frustrations they had. I think that is one of the reasons the project was such a success. They felt like they were taken seriously. It was not just someone that told them: "this is the solution". (...) We just dived in there with an open mind talking and listening to people. Formally and informally. (...) We tried to understand which problems and pain points they had in their processes. We had to understand a long and complex process, and what they were actually doing. We spent a lot of time on that. You have to do that in order to give them advice and suggestions. [Marius, Consultus]. (...) You need to be genuinely interested and engaged in the problems of the client. Both on the issues concerning the project, but also those issues that are unrelated! You have to empathize with them. That is what we did in this case. But that does not always happen. It depends on the type of relation you have developed to the client (...). (*How do you manage to demonstrate this engagement?*). Hm..., I don't know.... Is it possible to fake it? I believe that it has to be genuine. At least it was in this project. You can come off as being engaged, even if you are not. But that is much more difficult. *(How do you demonstrate this genuineness in practice? What do you do?)* For example, when you are in a meeting, instead of being laidback, you should sit on the edge of your seat. Be on top of things, be participative. It's about asking questions, even if I don't really have a need for an answer. It's about taking part in a conversation. Find out things, probing - what is the client really concerned about. (...) *(What do you mean being engaged in the project, but also engaged in issues unrelated to the project?*). Like in this case, the project manager (from the client) changed her position in the company, and was given management responsibility for the first time. And that was something we spent time talking about. It was an issue that concerned her, and we were able to give advice about what and how she could act, and what she should be aware of. [Marius, Consultus]. It's all about trust. There are many empty phrases in the consultancy industry, but we have something that we call the "trusted advisor". Over time you want to become a "trusted advisor" for the client. The way of doing this is to deliver high performance over time, and to prove that the client can trust you. Not suggesting things is also important... or, to put it this way, you should only suggest things you truly believe in. Because, if you suggest (acts like he is a consultant) "In Consultus we have so much knowledge about SAP BPC, it is a GREAT tool, and exactly what you

	need - it can do anything!". (Acts like he is a client). "Ok, you might be right. But have you considered this and this aspect?". It's all about providing specific and tailor made solutions for the specific client you work for. It's all about trust. I can disagree with a client (that trusts me) and I can also disagree with someone I do not know, but then I need to have arguments that are extremely well grounded. (...) In some cases you just let the client run the show, but then you haven't developed the right type of relationship with your client. When you don't disagree, when you don't give honest feedback, you end up with a poor client relationship. You will lose the client at some point. [Tobias, Consultus]. You have to talk (with your clients) about important things related to the project, but also things that are unrelated to the project, more personal things. It is extremely important to get to know each other. [Filip, Consultus]. In the long term, and especially when you working on clients, you are in the position to make a "hit-and-run". Your client's best interest becomes your best interest. At least we like to think about it in that way.. [Viktor, Consultus]. *[Even talks about how he conducts workshops with a client]*: A tool I guess, well I haven't though about it like that before - is active listening: Ask again, confirming: "is this what you mean? Is this what you are talking about? Did I understand you the right way? And the interplay between my colleague and me will be that I can interrupt if I see something or experience something that he has not been aware of; in the meeting, or later. Like; "She was a bit on edge today, be careful the next time, maybe we should have a talk with her before the next meeting" [Even, Consultus].
Care in knowledge sharing	After a while, it became clear that it was me who had the technical competence in the team, and I knew that several of the others were a bit uncomfortable with the technical stuff. It's always uncertainty with everything new, and when you deal with such technical gadgets, people often become insecure. Therefore I invested a lot of time in being available so they could ask me, or use me to test the technical solution. I remember a night I was in the office. The clock was 8pm and one in our team (from the client side) logged on the system. He wore an apron and he was cooking in his kitchen at home, and he said: "Can we test the technical solution while I'm boiling potatoes?" And I said: "Yes, sure we can!", and then we just sat and tested the solution. It was like trial and error without any stress, and he knew that I was available. I was there to help, and it was like "we do this together". After that episode it happened something in our relation, and in the team. For me, he signalled that he was very interested - he used is evening to test the solution. (...) That gave an extra boost to the team. [Ida, Consultus].
Knowledge sharing is meaningful for both the help seeker and help giver	*[Sara talks about the things that engages her]*: What I look forward to is when people ask me questions and I can take a few minutes and answer them (...).. I suppose I just like to help people if it's not too complicated. (...) I like the knowledge questions (...) And I like discussions, that's what I like the most about my job, sit down with somebody that maybe has a similar background and just go back and forth about something. I think that's what I like specifically most about my everyday. [Sara, Noroil]. I went to my boss and said, "I have psychological issues, I need a real project", and I told her that no one helped me with my first task. (...) I didn't get any tasks, because the other team members were always in a hurry (...). I think they viewed me as a trainee. They told me "you are not supposed to do anything (of value) in exploration the first ten years of your career, don't expect that you will do anything in these oil companies the first ten years". It was uncomfortable. (...) When you are new you don't have a clue. You really need that someone give you a task, and that never happened. (...) But after six months I got an assignment, a small prospect. But then my manager said, "you need a project". And I told them " Yes, I recently finished my doctoral degree, so I am used to having a project". But they couldn't create a project for me, so that was disappointing. [Ola, Noroil]. For instance, when someone brings cake every Friday or nowadays when it is Christmas and people bring gifts every day [refers to an advent calendar], and when people come up with suggestions and ideas. That is what creates a positive atmosphere in a group. [Karl, Noroil] But I must say that I was really happy to work in the team. A measure of how good it is, is this (presents scenario): You get in the office in the morning, you open the door to your office and you smile. That means that you are happy in the place you are. And you can be in the place you are, if you are happy with the people you work with. Because, you know, you might like your work a lot, but if you think that the other people around are not good, the people that are around, you are not so happy. Sometimes I was going in the office, smiling and I said to myself I am privileged to do something I like so much. That is [smiling] a measure of being well. So that's good [Marco, Noroil]. *[Martin about how feels about being asked for help:]:* I think it is very good. You feel as if you are taken seriously. Like you can make a contribution. I think that is common about everyone working here and that like to work here - I that we have a genuine wish to help people. You want to make contribution so that the team will be even better. (...) You are proud of yourself, and you become proud when you are asked. And you know that is I help you with that, we can together make sure that this project right here right now can actually make a small difference in the world. [Martin, Consultus].

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-A practice-based view on knowledge sharing and high-quality connections -

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CONTENT

PART I: INTRODUCTION

1.1 Introduction

Knowledge is often argued to be a source of competitive advantage in today's highly dynamic business environment (e.g Davenport & Prusak, 1998; Grant, 1996). To build a knowledge-based competitive advantage, it is necessary, but insufficient for organizations to rely on staffing and training systems focused on selecting employees with specific knowledge, skills and abilities. Organizations must also consider how to transfer expertise and knowledge from experts who have it, to novices who need to know (Hinds, Patterson & Pfeffer, 2001; Wang & Noe, 2010). Organizations depend on individuals to share, develop and combine knowledge in new ways to meet specialized demands and unique user requests.

Considerable research has investigated both the antecedents and consequences of knowledge sharing (Wang & Noe, 2010). Research has shown that knowledge sharing is positively related to reduction in production costs, faster completion of new product development projects, team performance, firm innovation capabilities and firm performance (e.g., Arthur & Huntley, 2005; Collins & Smith 2006; Cummings, 2004; Hansen, 2002; Lin, 2007; Mesmer-Magnus & DeChurch, 2009). As organizations have realized the potential benefits of knowledge sharing, considerable financial investments in knowledge management systems have been made. These systems are aimed at collecting, storing and distributing knowledge throughout the organization (Wang & Noe 2010, 115). However, despite these investments, KMS have often failed to facilitate knowledge sharing (Babcock, 2004). Some believe that an important reason for this failure is the lack of consideration of how the organizational and interpersonal context influences knowledge sharing (Carter & Scarborough, 2001; Voelpel, Dous & Davenport, 2005).

Although much is known about the antecedents and consequences of knowledge sharing, less is known about the everyday knowledge sharing practices and activities that exists in organizations, and how they look like when at its best. Several calls have been made for research on knowledge sharing practices (Perrin, 2012; Feldman & Orlikowski, 2011):

> In the boxes and arrows figures so prevalent in organization theory, the boxes are always labeled, while the arrows are often unadorned by any text, as if they speak for themselves. In practice theory the emphasis is on the arrows, on the relationships and performances that produce outcomes in the world. In other words, practice theory theorizes the arrows so as to understand how actions produce outcomes. (Feldman & Orlikowski, 2011, p. 17)

Perrin (2012), who adopted a practice-based approach when examining knowledge managers argues that: "(…) the academic literature examining the practices of knowledge managers in an organizational context is very limited in quantity and quality" (p. 204). Further, a recent a literature review by Wang and Noe (2010) highlights the need for more qualitative research: "(...) qualitative studies provide a rich and in-depth examination of the organizational context in which knowledge sharing occurs" (p. 126). This master thesis aims to adopt a "practice lens" to knowledge sharing. By "practice", we mean the "situated recurrent activities of human agents" (Orlikowski, 2002, p. 253), or simply "what people do" (Szulanski, 2003). Further, we understand knowing as an ongoing, social process that is continually enacted through people's everyday activity (Orlikowski, 2002). Thus, this thesis sees knowledge sharing as dynamic, relational and accomplished in ongoing everyday actions.

To capture the relational aspect of knowledge sharing activities we will look to literature on high-quality connections (HQC). In this stream of research, the relations between people in organizations are given much attention. Dutton and Heaphy (2003) argue: "(…) when people are at work, connections with others compose the fabric of daily life" (p. 264). These connections can take form as part of long-term relationships or brief encounters. A connection is the dynamic, living tissue that exists between two people when there is some contact between two people, involving mutual awareness and social interaction (Dutton & Heaphy, 2003, p. 264). The authors define the quality of the connection between two people in terms of whether the connective tissue is life-giving or life-depleting. HQCs allow the transfer of vital nutrients; it is flexible, strong and resilient (Dutton & Heaphy, 2003, 263). Central to Dutton and Heaphy is that the connections can function as vessels in which knowledge is passed from one person to another. In HQCs knowledge is absorbed faster, more completely, and with the quality of the connection intact or enhanced (Wenger, 2000; Lave & Wenger, 1991; Lampert, 2001). According to Dutton and Heaphy (2003, p. 275), a focus on connection quality "(…) adds a critical new dimension to our

understanding of people's behaviour at work: it puts individuals in context, but in a context that is alive, dynamic, and embodied, making it a rich reservoir of possibilities for human behaviour and accomplishment" (Dutton & Heaphy 2003, p. 275). We therefore believe that the concept of HQCs will be useful in our investigation on how knowledge sharing practices look like when at its best.

1.2 Research question

In response to the lack of practice-based approaches to knowledge-sharing at work (Perrin, 2012; Feldman & Orlikowski, 2011; Wang & Noe, 2010), and the call for bringing human actors, their actions and interactions to the center stage of organizational research (Whittington, 2011; Feldman & Orlikowski 2011; Jarzabkowski & Spee, 2009; Dutton & Heaphy, 2003) the aim of our thesis will be to investigate the following questions:

In the context of knowledge-intensive firms: How do practices for knowledge sharing look like when at its best, and what role do high-quality connections play in such practices?

PART II: THEORETICAL BACKGROUND

> Knowledgeability or knowing-in-practice is continually enacted through people's everyday activity; it does not exist "out there" (incorporated in external objects, routines, or systems) or "in here" (inscribed in human brains, bodies, or communities). Rather, knowing is an ongoing social accomplishment, constituted and reconstituted in everyday practice.
>
> Wanda Orlikowski (2002, p. 295)

2.1 Introduction

The question of knowledge has long occupied philosophers and sociologists of science, and recently organizational researchers have become interested in this topic. One perspective on knowledge within organizational research suggests that "knowing is not a static embedded capability or stable disposition of actors, but rather an ongoing social accomplishment, constituted and reconstituted as actors engage the world in practice" (Orlikowski, 2002, p. 249). Knowing how find oil, solve problems, or riding a bike are capabilities generated though action (Orlikowski, 2002 p. 253). These capabilities emerge from the "situated and ongoing interrelationships of context (time and place), activity stream, agency (intentions, actions), and structure (normative, authoritative, and interpretive)" (p. 253). We believe that *a complimentary perspective on knowledge* (Hargadon & Fanelli, 2002), and the concept of *high-quality connections* (Dutton & Heaphy, 2003) will be valuable in our attempt to understand how knowledge sharing practices look like when at their best.

2.2 A complimentary perspective on knowledge

Organizational knowledge has been interpreted by researchers in multiple and possibly conflicting ways. Hargadon and Fanelli (2002) argue that the different approaches to understanding knowledge originates from the understanding of knowledge as either empirical or latent, not from seeing these two types of organizational knowledge as complementary and interdependent (p. 290). Knowledge resides in the *latent knowledge*; the schemas, goals and identities of individuals in organization, and in *the empirical knowledge*; the concentration of

artefacts and interactions that surround these individuals and comprise the organization.

The latent knowledge is the potential for novel action, and consists of schemes, goals and identities (Hargadon & Fanelli, 2002, p. 294). Schemata held by individual organizational members are knowledge structures for representing and relating elements in a particular context, and are also means for simplifying cognition's of incomplete information (DiMaggio, 1997 in Hargadon & Fanelli, 2002, p. 293). Schemata also consist of scripts that are templates for actions, or behaviours appropriate to a situation; goals that guide the action by directing the attention to particular aspects of the situation (Weick, 1995, in Hargadon & Fanelli 2002, p. 293); and identities that relate individuals to pre-established roles in particular situations (Hargadon & Fanelli, 2002, p. 293). Schematas are powerfully influenced by the social environment, and as a result the organizational members will have a similar schemata (Hargadon & Fanelli, 2002, p. 294).

Hargadon and Fanelli (2002) argue that "while latent knowledge exists as the potential for novel action, empirical knowledge exists in action" (p. 294). Empirical knowledge resides within the physical and social artefacts like products, tools and routines. By participating and observing, individuals construct, reconstruct, and/or modify the scripts, goals and identities that make up their relevant schema. Empirical knowledge is thus in the practices and actions that organizational members take part in (Hargadon & Fanelli, 2002, 294).

Hargadon and Fanelli (2002) argue that the "organizational knowledge can be understood only as the result of an ongoing, circular interaction between individually held latent knowledge and the knowledge manifest in the surrounding environments" (p. 295). In this interaction latent knowledge is converted into empirical knowledge and vice versa (p. 295). When this process unfolds in groups and organizations, knowledge is reproduced as it is made empirical in one person's actions and made latent again by another's experience of that action. (Hargadon & Fanelli, 2002, p. 299). This relationship between the latent and empirical qualities is necessary in the study of knowledge. Further, it is through this interaction process knowledge becomes a social, and organizational phenomena (Hargadon & Fanelli, 2002, p. 295). Since this interaction process is social, care in organizational relationships becomes important for knowledge sharing.

2.3 Care and knowledge sharing

Von Krogh (1998) argues that since knowledge sharing is a social, interactive process, it is also highly fragile. "Each individual is faced with the challenge of justifying his true beliefs in the presence of others and precisely this process of justification makes knowledge creation a highly fragile process" (von Krogh, 1998, p, 135). Von Krogh (2002) argues that the value of care in organizational relationships is one key enabling condition for the knowledge sharing and creation process. "Constructive and helpful relations speed up the communication process, enable organization members to share their personal knowledge and to discuss their ideas and concerns freely" (von Krogh, 1998, p. 136). He further (1998, p. 141) claims that the prerequisite of actually creating new knowledge in organizations is high care in the organizational relationships. When care in organizational relationships is high, the organizational members will be able to dwell in the perspectives and concepts of the other participants. When this happens, the organizational members change from "looking at", to "looking with" the concept, or problem residing in the colleagues mind. Carmeli, Brueller and Dutton (2009) argue that when relationships between members or an organization is of high quality, it will be both an enabling structure and encouraging psychological condition that help foster learning behaviours (p. 84). This leads us to the positive organizational scholarship tradition within organizational science, which is concerned with positive relationships at work.

2.4 Positive relationships at work

There is at present a movement towards an increased focus on positive and capability-building aspects of organizations (e.g. Cameron, Dutton & Quinn, 2003; Bakker & Schaufeli, 2008; Luthans, 2002; Martela, 2012; Carlsen, Clegg & Gjersvik, 2012). This movement is often referred to as positive organizational scholarship (POS). POS focuses on "elevating processes and outcomes in organizations", or more generally, on "that which is positive, flourishing, and life-giving (Cameron & Caza, 2004, p. 731). Traditionally, research on employee well-being has focused on the negative aspects of work, addressing mainly the question of how what is wrong can be fixed (Martela, 2012, p. 34). Researchers within the POS movement are not denying the negative aspects of work experience. Instead, they aim "to counterbalance the current focus on the negative

by giving equal attention to those factors and processes that produce excellence, thriving and human flourishing within organizations" (Martela, 2012, p. 34). By learning more about the conditions and capabilities that create positively deviant behaviour in organizations it is believed that the focus will shift from only repairing the negative things in life to also building positive qualities (Seligman & Csikzentmihaly, 2000, p. 5).

Within the POS movement, one topic of interest is positive relationships at work. Dutton and Ragins (2007, p. 6) argue that too often work relationships have been studied from a social exchange theory perspective in which relationships are a mere means for exchanging resources for the purposes of achieving utility or power. In contrast, we should look beyond that to see how work relationships could be "a generative source of enrichment, vitality, and learning that helps individuals, groups and organizations grow, thrive, and flourish" (Dutton & Ragins, 2007, p. 3).

The movement towards understanding positive relationships at work was arguably set in motion by the influential article on high-quality connections by Dutton & Heaphy (2003), which distinguished high-quality and low-quality connections between two individuals based on "whether the connective tissue between individuals is life-giving or life-depleting" (p. 236). Dutton and Heaphy (2003, p. 266) argue that there is three defining characteristics for a high-quality connection: 1) A higher *emotional carrying capacity,* meaning that the connection has the capacity to "withstand the expression of more absolute emotion and more emotion of varying kinds"; 2) A higher *tensility*, meaning the "capacity of the connection to bend and withstand strain and to function in a variety of circumstances"; and 3) A higher *degree of connectivity*, meaning the relationship's "generativity and openness to new ideas and influences". People in high-quality relations have three essential subjective experiences (Dutton & Heaphy, 2003, p. 267): First, *feelings of vitality and aliveness*, second, *positive regard* and the *feeling of being known or being loved*, and third, they are marked by *felt mutuality*, meaning that both people in a connection are engaged and actively participating. Dutton and Heaphy (2003) argue that although empirical research is still lacking, high-quality connections lead potentially to a number of positive outcomes (p. 275-276). If organizations can create a fertile ground for building high-quality connections, employees "may be able to (…) engage each other more fully, be more vulnerable in the process of learning, and experience

more interpersonal valuing through positive regard, all of which cultivate positive meaning about being an organizational member" (Dutton & Heaphy, 2003, p. 276).

Although positive relationships at work has received more attention in the literature in recent years (e.g. Dutton & Ragins 2007; Carmeli, Brueller & Dutton 2009), empirical examinations of positive phenomena are still vastly underrepresented in organizational research (Cameron & Caza, 2004), and researchers within POS tradition are looking for more empirical work on its primary topics (Linley, Garcea, Harrington, Trenier & Minhas, 2011). Positive relationships at work are " a research frontier that holds promise and possibility" (Dutton & Ragins, 2007, p. 400), however, much work remains to be done before the excitement and theoretical explorations turn into empirically explored and validated research. The present master thesis will contribute to this need by exploring positively relational knowledge sharing experiences in a specific empirical context.

2.5 Relationship quality and knowledge sharing behaviours

Several scholars have argued that the quality of relationships between organizational members will affect knowledge sharing- and learning behaviours. For instance, Carmeli et al. (2009) discovered that among university students both the capacities for and the experiences of high-quality relationships are positively associated with psychological safety, which in turn predicts learning behaviours. Dutton and Heaphy (2003, p. 273) argue that there are theoretical explanations for how HQCs affect learning. Connections can function as "vessels in which knowledge is passed from one person to another; in an HQC, knowledge is absorbed faster, more completely, and with the quality of the connection intact of enhanced" (Dutton & Heaphy, 2003, p. 237; Wenger, 2000; Lave & Wenger, 1991; Lampert, 2001).

Studies of communities of practice illustrate how high-quality relations enable employees to join, participate in, and learn from groups of people organized around a socially defined competence. This form of relational learning is demonstrated in the study by Orr's (1996) study of Xerox technical representatives, which showed how high-quality relations facilitated knowledge sharing between the technicians. The quality of the connective tissue facilitated

storytelling, made question-asking safe, and created a context in which practitioners could elaborate and develop their practice (Dutton & Heaphy, 2003, p. 273).

Further, HQCs enable people to expand their knowledge about the self, the relationship, and the world. When mutual empathy and mutual empowerment characterize relationships, people can elaborate on their own thoughts and feelings, and build new shared understandings (Miller & Stiver, 1997). Further, when people demonstrate care in HQCs, they create an enabling context, which facilitates the creation of new knowledge (von Krogh, Ichijo & Nonaka, 2000).

Therefore, a learning lens on the power of HQCs "reminds us that these forms of ties are micro-contexts in which people acquire, develop, and experiment with new knowledge or ways of being" (Dutton & Heaphy, 2003, p. 274). According to Dutton and Heaphy (2003), relationally competent people can use HQCs to design effective learning situations for others (Dutton & Heaphy, 2003). Thus, the concept of HQCs can be useful in our attempt to understand how knowledge sharing practices look like when at its best.

PART III: METHODOLOGY

3.1 Abductive inquiry

When choosing a method design, organizational researchers face the choice between inductive and deductive forms of reasoning. Deductive modes of reasoning involves "testing theory against practice using a positivist epistemology", while inductive modes involve "developing theory from practice using an interpretive epistemology" (Hatch & Cunliffe, 2006 in Martela, 2012, p. 95). Usually, but not necessarily, deductive reasoning is connected to quantitative research where the aim is to test pre-formed hypotheses against a data set, while inductive reasoning is often used in qualitative research where the aim is to draw theory from rich and pure data (Martela, 2012, p. 95-96). Thus, ideally, induction starts from theory-free facts, while deduction starts from fact-free theory (Alvesson & Sköldberg, 2009, p. 4). However, according to Martela (2012) both induction and deduction have problems as forms of inference suitable for organizational research. Deductive reasoning does not provide selection criteria for choosing between alternative explanations, and thus in effect "sidesteps the question of alternative explanations and focuses instead on testing a single theory for empirical adequacy" (Ketokivi & Mantere, 2010 in Martela, 2012, p. 96). Inductive reasoning, on the other hand, faces an "unavoidable logical gap between empirical data and theoretical generalizations" (Ketokivi & Mantere, 2010, in Martela, 2012, p. 96): Researchers engaged in inductive reasoning always need something more than pure induction in order to interpret the data.

Having found both deductive and inductive reasoning as lacking, Charles S. Peirce (1903/1998a) argued that there is need for a third form of reasoning to complement these two. This he called *abductive reasoning*. Abductive reasoning is "the process of forming an explanatory hypothesis" (Peirce, 1998a [1903], p. 216), and has sometimes been called *inference to the best explanation* (Josephson & Josephson, 1994, p. 5; Marcio, 2001, p. 103). In Peirce's classic formulation of abduction, a surprising fact is observed and this initiates a search for a hypothesis that would best explain the surprising fact (Peirce, 1998b, p. 231). Thus, abductive inquiry starts with surprise, wonder, or doubt that questions one's current way of explaining reality. This surprise or wonder initiates a process where the inquirer uses imagination to come up with new ways of seeing matters that is consistent with the larger context of his or her other experiences and ways

of seeing the world, as well as explaining the surprising fact. Abduction can thus be viewed as a creative process; it is about "putting together what we had never before dreamed of putting together" (Peirce, 1998c [1903], p. 227). Abduction is therefore also a learning process – and arguably the only form of inference that can explain how new knowledge comes into being (see Prawat, 1999 in Martela, 2012, p. 96-97).

The aim of abductive inquiry is thus to arrive at the best available explanation taking into account one's observations, one's preunderstandings, and any other available knowledge such as previous theoretical explanations about the phenomenon (Martela, 2012, p. 98). "Best" here does not mean the objectively best explanation, but the best explanation from the point of view of the particular researcher or researcher community. The ways of reasoning found in medical diagnostics can be used as an example of abductive reasoning: A physician observes certain symptoms, and compares them with his previous knowledge. He perhaps consults some books or colleagues and takes further tests to arrive at a diagnosis. The result - the diagnosis - is thus "neither a logical necessity of the premises, nor a pure induction from the symptoms, and might not always be accurate but it nevertheless gathers together the best possible educated guess of the physician" (Martela, 2012, p. 98). In order to arrive at this understanding, a constant movement back and forth between theory and empirical data is necessary (Wodak, 2004, p. 200). The result of abductive reasoning is not the final truth about the phenomenon, but a tentative hypothesis that nevertheless would best explain the evidence and has the most potential to provide practical results (Martela, 2012, p. 98).

To sum up; in abductive inquiry the researcher starts with a situation in need of explanation: Given one's theoretical background and current world view, the data represents something surprising, novel or interesting; something one wants to understand better. Through an iterative process of abduction in which one analyzes the existing data and perhaps collects some new data and makes use of different theoretical perspectives, one aims to reach an appropriate explanation of the puzzling situation (Martela, 2012, p. 99). The aim is to reach a situation in which the data to be explained, the theories adopted and one's evolved worldview form a "resolved unified situation"; in other words a wholeness in which one's new way of seeing the matter is able to explain what before represented a mystery (Alvesson & Kärreman, 2007 in Martela, 2012, p. 99).

This means that in abductive research, the role of the researcher is *active*. In the abductive process the data itself and the preunderstanding of the researcher are in constant interplay. However, the researchers are as much "cultured beings" as the people they study, meaning that the data the researcher draws upon is always already interpreted in one-way or another (Martela, 2012, p. 99). Alvesson and Sköldberg (2009, p. 6) claim that we never see single sense-data, but always interpreted data, data that are placed in a certain frame of reference" (Alvesson & Sköldberg, 2009, p. 6). This is similar to Giddens (1976) concept of double hermeneutics. In a way, abduction is therefore about evolving the researcher's way of perceiving - his or hers perceptual schemes - to accommodate for novel experiences that disturbed these schemes by seemingly not fitting into them. Actual inquiry never starts from a neutral tabula rasa position, but it takes place through the actions of the inquirer that are shaped by his or her particular world view (Martela, 2012, p. 100). The present master thesis aims to follow the logic of abductive inquiry when examining what role HQCs play in knowledge sharing practices in knowledge-intensive firms.

3.2 Research design and data collection

Above we presented the theoretical grounding for our research approach. Let us now turn to a discussion of how the empirical research process of this master thesis will proceed in practice. A commitment to the practice lens requires us to combine selected observations with semi-structured and open-ended interviews (Feldman & Orlikowski 2011, 18). We choose to use two different methods because it allows for a between-method triangulation that would increase the quality and reliability of the data gathering process (Denzin, 1978; Jick, 1979). The combination of interviews and participant observations can offer good synergies. Participant observations can make the researcher more informed about the empirical context and what questions that is relevant to ask in the interviews, whereas the interviews offer opportunities to ask about the things that one has observed and to validate one's feelings about what one has seen (Martela, 2012, p. 109). In addition to interviews and observation, this study will strive to be co-generative, as we believe that reflective practitioners are valuable co-creators of theory (Carlsen, Klev & von Krogh, 2004, p. 2).

Our method design consists of three phases (see figure 1): First, we must learn sufficiently about the organization to be precise in choosing relevant projects, people (for shadowing) and arenas (phase 1). As we discussed above, a "constant movement back and forth between theory and empirical data is necessary" in abductive inquiry (Wodak, 2004, p. 200; Martela, 2012, p. 98). Thus, we conducted a pilot study prior to this preliminary thesis. The pilot study consisted of 10 semi-structured interviews with employees working in oil exploration in Noroil (for interview guide see appendix 1). The interviews were designed to shed light on collaboration and knowledge sharing practices in oil exploration in Noroil. By asking a few open-ended questions, encouraging exemplification, and dwelling on sources of genuine engagement, we have tried to facilitate co-construction of narratives (Holstein & Gubrium, 1995). In the final section of this preliminary thesis report, we will discuss the preliminary findings that emerged from these pilot interviews.

In the second phase we will conduct more observations and interviews (phase 2). We plan to collect data during February 2013. In the final phase of data collection, we might have to do follow-up interviews in order to validate our findings (phase 3).

Figure 1: Research design

Phase 1	Pilot study: Interviews with 10 informants in Noroil
Phase 2	Data collection: Interviews with more employees in Noroil, interviews 10 employees in Consultus, and observation in the two case organizations.
Phase 3	Follow-up interviews in Noroil and Consultus.

3.3 Research setting

Given our willingness to dig into the relational dimensions of knowledge sharing/knowledge creation in organizations, we think of Noroil and Consultus as good sites for our empirical research. Both companies are knowledge-intensive firms and engaged in knowledge work (cf Alvesson, 2004). According to Alvesson (2004, p. 1) work and organizations that are knowledge-intensive "revolve around the use of intellectual and analytical tasks, and are typically seen as requiring an extensive theoretical education and experience to be carried out

successfully" (Alvesson, 2004, p. 1). Jobs in such firms are not highly routine and call for some degree of creativity and adaptation to specific circumstances. Examples of knowledge-intensive firms include management and IT consultancies, and high tech and R&D based companies (Alvesson, 2004, p. 1).

Noroil is a leading energy company with operations in 36 countries. Building on 40 years of experience from oil and gas production on the Norwegian continental shelf, this international company are committed to accommodating the world's energy needs, applying technology and creating innovative business solutions. Noroil are headquartered in Norway with approximately 21,000 employees worldwide. The participants in our study are working within oil exploration. The nature of work within oil exploration is and very much about human interaction (Carlsen et al. 2012). Hence, explorers are well suited as participants when the aim is to study the role of HQC in knowledge sharing and knowledge creation.

Consultus is a global management consulting, technology services and outsourcing company. Consultus collaborates with its clients to help them become high-performance businesses and governments. In Norway the company has approximately 1100 employees, and the main offices is located in Oslo, Bergen and Stavanger. The participants in our study work within management consulting. The nature of work within management consulting can also be characterized as knowledge-intensive work, and hence this is an appropriate research site in our study.

3.4 Ethical considerations

Participation in the study is voluntary. All participants will be ensured confidentiality of any gathered information. Prior to the interviews, the subjects will sign a consent form, which will ensure anonymity and their right to withdraw at any time without stating a reason. The audiotaped records will be deleted after they are transcribed, and the transcription will remain within the department, and will not be used for other purposes than stated in the consent form.

PART IV: PRELIMINARY FINDINGS

4.1 Emerging categories from pilot study

As previously discussed, the abductive research conveys the researcher as active. In the data collection process the researchers will always be interpreting in one way or another. In this way, the data will be both a social construction of the researcher along with the socially constructed views of those who are being studied. These two types of constructions can be divided into first and second order concepts (van Maanen, 1979). First order concepts are "facts" of an ethnographic investigation, or the reporting of the informants' point of view. Second order concepts are the researcher's interpretations (as grounded in theory) of these "facts" (van Maanen, 1979, p. 540). Van Maanen (1979) makes an important distinction within the first order categories. There are operational data, which is the actions that can be observed in the studied scene; and presentational data, which is the informants own interpretations used to give account for a given descriptive property (p. 540). Due to the use of interviews, we are dealing with operational data as our informants are describing practice, and presentational data as the informants are given their own interpretations of this practice.

The raw data from our pilot study was coded into first order concepts (see appendix 2). These concepts are, as described by Miles and Huberman (1994) labels for assigning units of meaning to the information we have compiled so far. In our analysis of the raw data we looked for patterns and regularities that our informants reported in situations of "best practices". We asked about situations where collaboration was at its best, about successful projects, situations where the project moved forward, what they saw as an extraordinary team, what they would change to improve collaboration etc. (see appendix 1). Four categories emerged as especially interesting (see appendix 2):

4.1.1 Category 1: Relationships

First, all informants described an ideal relationship with their colleagues as honest, friendly, and close. In the following quote, our informant Marco talks about a project which resulted in a large oil discovery for Noroil. He describes the relationship with his colleagues during this project in the following way:

> (…) we had a very good collaboration. I can see that we were really a team in the sense that we enjoyed to work with each other, and we cared for each other, which is very good. I don't think through time, none of us has been set aside. Of course, through time there has been some misunderstandings, and some small conflicts, but I think that it is the sort of conflicts you have also with very close friends sometimes. [Marco].

Pablo further explains:

> The people I have a relationship outside work I collaborate better with. I think that is very obvious. For example, I have friends that I go climbing with, and I have beers with, and come home… We already have a relationship independent of work, so no matter if we are tough with each other at work, or direct, it does not matter because I do not need to be accepted at work, - I am already accepted in my real life. So then I can be tough. But other people, - the only relationship we have is through work. So for them, maybe, some kind of barrier because you do not have this extra relationship outside work… So I think that the people I work better with are the people I also know better. We are friends outside work. Because then I can be more open with them. [Pablo].

4.1.2 Category 2: Asking questions, being curious and open

The second category that became salient was the importance of asking questions, being curious and open. This was important to many informants when they explained who they collaborated well with, and what they saw as important in successful projects. Our informant Pablo argued that a successful oil-explorer is open and curious:

> For me, exploration is explore, explore is going to the unknown, and a lot of people are not confortable about the unknown, because you do not know how to deal with it. In exploration I think curiosity is the first thing. If you are not curious you will hit a wall and you will never improve. [Pablo].

4.1.3 Category 3: Time

The third category that became very evident in the coding process was the concept of time. Most informants mentioned time pressure, a set final deadline and urgency as characteristics, and pre-requisites of successful projects. In her description of a project where collaboration was at its best, our informant Zara explained:

> It was going over a few weeks or a month and it was a lot of work in that month and a lot of time pressure but that is why the method worked so good because we knew we only have that much time and we need to make this happen, and that made a very positive atmosphere in the group. [Zara].

4.1.4 Category 4: Location / Physical objects

Finally, all informants, except one, emphasized room and physical objects as vital for successful projects. This category also became evident when the informants described what they would change in order to improve collaboration. As Per and Fredrik explain:

> Large rooms with very large screens. (...) So that everyone can sit and look at things at the same time. (...) You have your own desk, with screens that are linked together. So that when we work together you can say (demonstrates by pointing at the screen)"I don't understand this". Then we can take two minutes and discuss that part. When you have a question, and you can see the other persons cards. Then discussing becomes easy. That is very, very important. And that is so evident now that we have moved, and placed in individual offices. It is a step back (...) we want to sit together. We want discuss eachothers problems. We want to see what the others are doing. [Per].

> The way the room is designed is very important. (...). You need a notepad where you can sketch opportunities, sketch ideas - and walls. A wall where you can hang things. And whiteboards. It is about getting the ideas up and out there visually. Because, we may not be that good at describing things in words in our industry (...) If you speak and talk at the same time, then you get double impact. (...) Speaking, drawing, making mistakes - people pay more attention to that than in a glossy presentation where everything is already decided. [Fredrik].

Only one of our informants did not mention room and time as important for successful collaboration. Interestingly, the same informant did not report any subjective experiences of being in a high-quality connection. We would like to investigate further whether this can have any significance: Could it be that members experiencing high-quality connections at work are more concerned with physical objects and time pressure? We believe that the relation between knowledge sharing, HQCs, time and physical space will be interesting to investigate further.

4.2 Plan for thesis progression

4.2.1 Theoretical adjustments

As presented above, it became evident from the pilot study that the quality of relations and HQC (Dutton & Heaphy, 2003) play an important role in knowledge sharing and knowledge creation within oil exploration in Noroil. Therefore, we want to continue to dig into the relational aspects of knowledge sharing. Following the logic of abductive reasoning (Peirce 1998; Alvesson & Sköldberg, 2009; Martela, 2012) and the "constant movement back and forth between theory and empirical data" (Wodak, 2004), we also want to look to literature on the significance of "time" and "space/room" for knowledge sharing in order to proceed with our thesis. Surprisingly, these categories became salient in our data. In order to understand how these concepts play a part in the best knowledge sharing and knowledge creation practices, we will look at theory that deals with knowledge as related to social, physical and temporal settings. One stream of research that could be fruitful is the literature on "boundary" objects. Tsoukas (2009) argues that artefacts, tools, and other physical objects often mediate conversational interaction in organizations, and are thus important for knowledge creation. Tsoukas (2009, p. 953) claims that organizational members can better articulate knowledge that is difficult to articulate by interacting with artefacts, prototypes and visual aids. Similarly, Hargadon and Sutton (1997) underlined the importance of physical products, components, prototypes, sketches, notes, and drawings in creating new knowledge in the context of product design. Tsoukas (2009) further claims that future research should focus on how and when artefacts and tools can mediate conversational interaction, and thus contribute to knowledge creation (p. 953).

In addition to location and physical objects, time pressure emerged as a salient category. In response to what characterized a successful project, the informants in Noroil mentioned urgency and time pressure as important. In oil exploration, collaboration is necessary to move projects forward. This means that time pressure demands more intense collaboration and knowledge sharing between oil explorers. We would like to know why time pressure is so important in successful projects, and how time pressure is connected to the quality of work relationships? These are questions that we will discuss in order to proceed with this thesis.

4.2.2 Schedule for thesis progression

	January	February	March	April	May	June	July
Preliminary thesis report	X						
Read more literature	X						
Method review and further development of interview guide	X						
Data collection		X					
Transcription of interviews		X	X				
Analyse data			X	X			
Follow-up interviews and feedback from informants				X			
Write thesis				X	X	X	
Hand-in thesis							X

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