Abstract

This thesis proposal presents paradoxes within current trust and knowledge management literatures as a lens for understanding challenges in virtual teams working across organisational and geographic boundaries. By exposing contradictions within current virtual team research, the author proposes a need for a different, multi-level, multi-theoretical approach to virtual team research in order to overcome the paradoxes. A moderate constructionist research position building on Critical Realism is proposed. To situate the project within current literatures, trust, knowledge management and virtual team literatures are reviewed. These are used to support the paradoxes used as a lens for understanding. A research design is presented building on interviews, documentary analysis and observations analysed using Social Network Analysis and James Gee’s framework for discourse analysis. Finally preliminary findings based on documentary analyses and the six interviews completed during the first year of the project.
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1. Introduction

Global companies seeking a knowledge management (KM) strategy to leverage knowledge assets among employees across the organisation seem little helped by paradoxes in the research literature. In knowledge management literature, findings indicate that strong and frequent relations enable colleagues to communicate more tacit knowledge (particularly knowledge management research building on Nonaka & Takeuchi, 1995; E. Wenger, 1998). Yet key findings from Social Network Analysis (SNA) suggest that weak relations (termed weak ties in SNA theory) provide the most novel knowledge. (Granovetter, 1973). This paradoxical relation between relation (tie) strength and knowledge type (tacit vs. novel) can potentially be solved by virtual teams. Virtual teams bring together individuals across geographical and organizational boundaries by technology, thus potentially building weak ties between otherwise unconnected individuals. These weak ties bridge the unconnected strong tie networks of the individual team members, thus potentially providing access to both more tacit knowledge and more novel knowledge.

However, later SNA studies combining Granovetter ‘s social network thinking (1973) and current knowledge management thinking have found that weak ties are mainly effective when communicating less tacit knowledge (Hansen 1999), and that the potential of weak ties may only be leveraged if the weak ties are trusted (Levin & Cross, 2004). The importance of trust to team effectiveness is also highlighted by Baskerville and Nandhakumar (2007) who found in their case study that to be effective, virtual team members need to trust each other. This raises another paradox for organisations using virtual teams, because theories of interpersonal trust indicate that trust is built on knowledge about the other party (McAllister, 1995), but if the tie is weak, there is little knowledge on which to base that trust.

These paradoxes in virtual team work arising from a combination of KM, SNA and applied psychology findings suggest that approaching virtual teams from an interdisciplinary perspective may offer a new approach to virtual team research. This may be needed, as reviews of current virtual team research reveal inconsistent findings in the field (Curşeu, 2008; Martins, Gilson, & Maynard, 2004; Petersen & Kampf, Forthcoming). For example the case studies by Assudani (2011) and Al-Ani, Horspool and Bligh (2011) find few knowledge and communication related problems in the virtual teams studied, while Breu and Hemingway (2004) find that use of virtual teams lead to fragmentation of existing knowledge networks. However, most studies focus on the analytical level of the virtual team, while contextual factors at the organisational level which might explain the inconsistent findings are mentioned only summarily. This is supported by Martins, Gilson and Maynard (2004) who find in their review of virtual team literature that the organizational context of virtual teams is understudied in the current literature. Furthermore, findings within management literature indicate that multilevel approaches combing organisational, team and individual level have long been advocated but rarely practiced (Kozlowski & Klein, 2000).

This PhD project seeks to understand how the corporate context affects trust and knowledge relations in the virtual teams in local branches of a global human resource development consulting firm, referred to in the project as Learning and Development Company (LDC).
1.1. The case company

The global headquarters of LDC has a centrally positioned research and development department designing portfolios of course materials and workshops on leadership training and sales, team and personal effectiveness. These portfolios are used by daughter companies in more than 20 countries to solve training and development tasks for local companies. The daughter companies are independent, but operate under franchise-style contracts with the right to use the corporate brand and products, and are semi-owned by the LDC headquarters. The global headquarters attempt to build global relations across the organisations by hosting international face-to-face meetings at the headquarters, linking employees via online spaces, and facilitating global collaboration to support global clients. This project focuses on employees in local daughter companies in Denmark, Sweden and Benelux. These local employees collaborate with both their local colleagues and colleagues from the international headquarters, so day-to-day operations include interactions with both co-located and dispersed team members. Furthermore each consultant participates in global projects approximately every other year. During these intensive projects lasting 3 to 12 months, consultants from different daughter companies collaborate on international projects using short term virtual project teams. This dispersed corporate structure means that the local employees in Denmark, Sweden and Benelux studied in this project are embedded in both local and global corporate contexts each affecting employee trust and knowledge relations differently.

To sum up, employees in LDC are each part of a number of teams; some of these teams are co-located, though often using technology to communicate; some are entirely virtual, some are a hybrid. This can be generalised to current virtual team literature, where teams tend to fall within a continuum of co-location and dispersion (virtuality) (Martins, et al., 2004). The tendency towards participation in several hybrid (both co-located and dispersed members) can be generalised to the most recent virtual team literature, e.g. Al Ani, Horspool and Bligh’s (2011). Thus, in terms of theoretical sampling (Mason, 2002), LDC seems a typical case.

1.2. Research questions

Trust and knowledge relations in virtual teams are not only a result of the interactions within the team. They are also affected by the histories of previous interactions between individual team members. Furthermore both team and individual levels are affected by the organisational context in which the virtual team operates. In virtual team work, team members may even bring different organisational contexts into the team, affecting how work is conducted. For example, two of my Danish interviewees at LDC independently mentioned how the smooth work flow management practices of Benelux team members helped ease the work on two different virtual team projects. The influence of these three levels (individual, team and organisational) on trust and knowledge relations in virtual teams underlines the need for a multi-level approach to virtual team case studies. This analysis is supported by Kozlowski and Klein’s (2000) call for a multi-level approach in all organizational studies in recognition that the different levels affect each other, and therefore cannot be separated.

To study how the corporate context affects trust and knowledge relations in the virtual teams, the project uses observations, documentary analysis and interviews. Findings are analysed with the aid of SNA
tools and James Gee’s discourse analysis framework (see section 4 for details about research design and methodology). To understand the impact of corporate context on trust and knowledge relations in virtual teams in LDC, the study seeks to answer the following research questions:

Organisational level:
1. What does the organisation do locally and globally to support knowledge and trust relations in virtual teams?
2. How do local and global management processes help or hinder knowledge and trust relations in virtual teams?
3. How do local and global organisational practices, such as meetings and work flow management affect trust and knowledge relations in virtual teams?

Team level:
1. How do frequency and type of communication affect trust and knowledge relations in the virtual teams?
2. How and to what extent does the availability of face-to-face interactions impact on trust and knowledge relations in the virtual teams?
3. How do team structures and hierarchies support or hinder trust and knowledge relations in the team?

Individual level:
1. What do employees descriptions of their relations locally and globally reveal about their knowledge and trust relations?
2. How do employees consider the impact of technology on trust and knowledge relations in the company?
3. How do employees talk about the organisation in the interviews, and what does this suggest about their perceptions of the organisational culture?

The thesis proposal is structured with an almost equal emphasis on each section, but I’m particularly interested in feedback on the methodology, research design and paradoxes presented in the introduction and elaborated in sections 3.2. and 3.4. Following this introduction, I present the philosophy of science perspective guiding the thesis, as this is closely linked to the theoretical and analytical lenses used the research project. Next follows a literature review which positions the project within existing literatures on knowledge communication, trust and virtual teams. The methodology section first outlines the analytical lenses (discourse analysis, and social network analysis) before moving on to the research design. Finally, I present some tentative preliminary findings based on the 5 interviews I have completed, but not yet transcribed and analysed.

1.3. Preliminary definitions

Virtual teams: The definition of ‘Virtual team’ (occasionally termed ‘distributed teams’ or ‘dispersed teams’, e.g. Oshri, Kotlarsky, & Willcocks, 2007) has caused dispute, particularly regarding how dispersed and how virtual they need to be to fall under the definition (Curşeu, 2008). Recent definitions building on reviews of the current literature argue that dispersed teams tend to fall on a continuum between face-to-face relations
and being entirely virtual. Sometimes virtual teams with both co-located and virtual members are described as ‘hybrid teams’ (e.g. Al-Ani, et al., 2011), ‘Virtual’ here refers not to the team itself, but rather the manner in which they work together, i.e. through technologies such as emails and virtual online spaces such as Adobe Connect. Thus, a virtual team consists of real team members regardless of the definition. In recent literature, the consensus seems to be building on the fairly broad definition proposed in the virtual team literature review by Martins, et al. (2004). They define virtual teams as: "teams whose members use technology to varying degrees in working across locational, temporal, and relational boundaries to accomplish an interdependent task." (p. 808)

Corporate Context: A more detailed explication and definition of corporate context building on previous findings is a current challenge in the project, but currently I consider the following as elements of the corporate context affecting trust and knowledge relations in virtual teams:

- Organisational culture (my early approach to this contested concept in proposed in section 3.6)
- Management processes and structures
- Workflow practices
- Density of the networks in the organisation
- Perceptions of shared values
- Organisational practices

Trust: Trust is treated more thoroughly in section 3.3, but a preliminary definition is provided here. Trust is sometimes divided into vertical trust (trust in institutions) and horizontal trust (interpersonal trust) (Fage-Butler, 2011). It is the latter type which is in focus in this project, though the project aims to understand how the corporate context may help or hinder vertical trust, which may impact on the horizontal (interpersonal) trust. Interpersonal trust is defined in uncountable ways, and section 3.3 goes into a deeper discussion of the underlying trust types. Nevertheless, my review of virtual team case studies has revealed that one of the following two seminal definitions from applied psychology are used most often:

"Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." (Mayer, et al., 1995, p. 712)

"Trust is based on the expectation that one will find what is expected rather than what is feared. […] Trust [is] the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another." (McAllister, 1995, p. 25)

Both definitions emphasize the notion of risk or vulnerability involved in trusting another. Mayer, Davis and Schoorman (1995) also emphasises the difference between trust beliefs and the actions building those beliefs. The lack of analytical distinction between trust beliefs and trust actions in organisational studies is seen by Nooteboom (2011) as a problematic.

Tacit knowledge/explicit knowledge: ‘Tacit’ and ‘explicit’ are used here based on the works of Ikurijo Nonaka and his co-authors (Nonaka & Takeuchi, 1995; Nonaka, Toyama, & Konno, 2000; Nonaka & von
Tacit knowledge was coined by Polanyi (1966) to denote knowledge so embodied that it cannot be given voice. However, in Nonaka’s and his co-authors’ use a semantic shift seems to have taken place, since Nonaka’s theory rests on the communication of tacit knowledge as one of the central pillars in his SECI model (see section 3.1 for a more detailed explanation of the SECI model). Nonaka and von Krogh (2009) clarify that tacit and explicit should be seen as endpoints on a continuum, so that knowledge may be more or less tacit depending on complexity:

In organizational knowledge creation theory, tacit and explicit knowledge should not be seen as separate entities but rather mutually complementary and based on the same continuum. [...] An explicit form of knowledge is objective, rational, and created in the “then and there,” whereas a tacit form is actionable, subjective, experiential, and created in the “here and now” (p. 641)

2. Philosophy of science perspective

This section presents the project’s underlying perception of the nature of reality (the ontological position), and considerations about the ability of scientific enquiry to generate knowledge about that reality (the epistemological position). These arguments are used to justify the methodology employed in the research project. This approach is endorsed by Mason (2002) who argues that the choices of research methods and the types of data these are considered to generate should reflect epistemological and ontological position of the research project.

I adopt Alvesson and Sköldbergs (2009) concept of “reflexive research” (p. 9) to justify a critical-realist position both sceptical towards and fascinated by positivistic and constructivist approaches to research. It is a position which is sceptical (critical) of dichotomies such as empiricism (used here in a wide sense to include positivism and critical rationalism) and constructivism, rather considering these as complementary (David, 2005): “This false binary opposition between those who claim that social causes can be proven to explain scientific knowledge fully and unproblematically and those who argue that it is possible to suspend such causal explanations altogether.” (p. 27). Similarly, the traditional dichotomy between theoretical and empirical knowledge should by discarded. Rather all theory should be seen as empirically laden and empirical findings as theory laden (David, 2005). This perspective entails both a sceptical view on empiricist claims about an unproblematic relation between researcher, empirical data and reality; and a sceptical view on the radical constructivist perspective that there is no reality outside linguistic (co-)construction. David (2005) points to the reductionism entailed by both positions:

“To assume that everything is simple rhetoric [as in radical post-structuralism] is to say that the only analysis required is discourse analysis. This is an exclusivity that is no more justified by evidence or argument than the counter-claim that the only factor required to explain reality is empirical data and the universal ‘scientific’ methods required to collect and order such data (as in critical rationalistic and positivistic approaches).” (p. 28)
Instead David (2005) is a proponent of what he calls “reflexive epistemological diversity” (p. 29). Reflexive here refers to the view of complementarity between diverse theories (David). By letting the perspectives reflect back on each other, and letting their mutual criticisms force each perspective to ‘flex’ in response, the outcome of the research process will have a broader perspective on the heterogeneous reality it seeks to understand. In a similar vein, Alvesson and Sköldberg (2002) define reflexive methodology as based on “an open play of reflection across various levels of interpretation” (p. 271). Reflexive epistemological and methodological diversity thus allows research where the complementarity between otherwise opposing positions become more than the sum of its parts. This complementarity means that positions not only are reflected in each other, exposing weaknesses and amplifying strengths, but that each position ‘flexes’, i.e. is affected by this complementarity – exposure to the opposite view allows for more careful contemplation leading to increased validity in scientific research.

This PoS perspective can be described as a fairly moderate social constructionist standpoint, rejecting poststructuralist arguments that as humans we can never understand reality except through language, and that identity and relationships only exist in specific instances of language. I agree with Bruno Latour’s definition of social constructionism (cited in Alvesson & Sköldberg, 2009) stating that the “social” in social constructionism should not be taken to mean that the social constitutes reality, but that the process of construction is social; it is a co-construction. In that sense, the socially constructed can be described as a super-structure based on the physical and biological realities which we are also subject too. The construction is real in the sense that people act on the basis of it, by conforming to or reacting against the socially constructed reality. For example, you find Danes running and riding bicycles everywhere you go, because those activities have been constructed as “good for you”, but the prevalent health discourse is not arbitrary; it is based on studies of physical and biological reality. And anyone can (and do) choose to ignore it, which may have both social and biological consequences. Therefore socially constructed reality is not arbitrary or relativized; social reality is our constructed understanding of the physical reality. Alvesson & Sköldberg term this “realist constructionism” (2009, p. 33). This position seems fairly consistent with Mathew David’s criticism of post-structuralism, although he limits his discussion of discourse analysis to Potter and Wetherell, and therefore argues that the only aim of discourse analysis is to show that reality is a construction. James Gee’s critical discourse analysis used in this project focuses more squarely on the effect of what is constructed, and on what constitutes the foundation beneath it, to put it simply. His methodology therefore seems to be consistent with this PoS perspective.

The PoS perspective presented above has implications for how interview data is treated, because it impacts on the type of information you can gain through an interview. Harré and Vanlangenhove’s (1991) post-structuralist theory of identity implies that individual identity differs depending on the specific communication context. Thus the identity constructed in language in an interview situation is an expression of the interpellation of interviewee into an interviewee position, reflecting the interviewee response to that interpellation. Identity in Harré & Vanlangenhove’s (1991) positioning theory thus seems to reflect a post-structuralist viewpoint where the individual does not have a fixed core of identity which they bring to all relations in their lives – including the work relations studied by in this project.
From my PoS perspective, the specific communication context affects, but does not determine, individual identity as expressed in specific linguistic interactions, such as an interview. The history of previous relations and contexts are brought into the specific communication instance thus exerting a stabilizing force on the subject identity. So I would place myself outside of radical post-structuralism because I am focusing on the interview as a combined space for both construction of identity through language in the immediate space, and a place that is influenced by outside contextual factors of identity and history. Identities are constructed based both on the given context and the histories of identities brought into that context. Gee (2011) emphasises that “making visible and recognizable who we are and what we are doing always involves a great deal more than ‘just language.’ [It involves] acting-interacting-thinking-valuing-talking-(sometimes writing-reading) in the ‘appropriate way’ with the ‘appropriate’ props at the ‘appropriate’ times in the ‘appropriate’ places.” (p. 34. Formatting from the original). What is considered ‘appropriate’ seems to be determined not only by the specific context of an interaction, but also by an amalgamation of discourses and personal histories brought into the specific interaction by the interlocutors.

To sum up, the PoS position outlined could be argued to occupy a middle ground between more positivistic and more post-structuralist perspectives. In this sense the position argued for above is in line with Roy Bhasker’s Critical Realism (CR), a philosophy of science perspective conceived as a criticism and mediation between more empiricist, and more post-structuralist positions (Alvesson & Sköldberg, 2009). CR considers both empiricism and post-structuralism to be too reductionist, for the reasons outlined in the paragraphs above. In this criticism and the call for a middle ground, CR thus seems to converge with David’s (2005) arguments.

But CR goes further to build a philosophy of science perspective in its own right. Central to this is the notion of the ‘ontological phallacy’ (Alvesson & Sköldberg, 2009; Wikgren, 2005). Bhaskar claims that epistemology and ontology, which are traditionally seen as interlinked (as in Mason, 2002 mentioned at the beginning of this paper) should be separated. Bhaskar argues, based on Emmanuel Kant, that reality (including the socially constructed reality) exists in its own right regardless of our observation of it. But at the epistemological level, all knowledge about the world is constructed, and always has a subjective element. According to Bhaskar, it does not follow that our knowledge of reality is arbitrary, but it does entail that observation is not enough in itself to understand that reality. Observation will only reveal surface phenomena (i.e. empirical data), whereas CR seeks to find, through interpretation of the surface phenomena, the underlying patterns causing the surface phenomena (Alvesson & Sköldberg, 2009; Wikgren, 2005). As stated by (Wikgren, 2005) “We know, however, that events are not transparent, and in fact, in most cases, require more than description. Regardless of the method, the work of theory is to explain the hidden powers – processes or mechanisms – that produce the effects or events that we study.” (p. 12). This is where the theory has it’s weak point in my opinion, and need to know more about what is meant by “underlying structures” than is revealed in the two summaries cited above. Any advice on this will be accepted gratefully.

At the ontological level, CR makes a point of distinguishing between layers of reality. Reality is considered to consist of e.g. the physical, “the biological, the psychological, the social, and the cultural level” (Wikgren, 2005, p. 12), and research must not conflate one level into another. This is consistent with my arguments above for a moderate constructionist perspective. The recognition of exclusive layers of
reality is central to CR criticism of both empiricism, because it tends to conflate the social and cultural levels into the physical, and constructionism, because it tends to conflate the physical and biological levels into the social).

The main problem in the Critical Realist position seems to be the underlying structures mentioned above. It seems difficult to operationalize a concept such as underlying structures, and to draw a clear line between observation of surface phenomena and underlying structure. I need to study CR literature further to find any attempts at solving this problem.

3. Literature review

The purpose of this section is to outline my position within the fields of knowledge communication, trust and virtual teams. Both knowledge communication and trust are highly contested and complex terms, and deserve more than a brief definition. In the knowledge communication section, I outline the two main theories supporting the perspective on knowledge communication, namely Nonaka’s (1991) theory of the knowledge-creating company and Etienne Wenger’s (1991) theories of communities of practice. Though both theories have their origins in these 1991 articles, they have been elaborated in later books in articles with a number of co-authors. The trust section reviews interpersonal trust theories and combines the most oft cited theories into a trust model. Section 3.5. on virtual teams provides an overview of patterns within the current workplace case studies on virtual teams based on a systematic, integrative literature review I conducted with my supervisor Constance Kampf (Petersen and Kampf, forthcoming). Finally, section 3.6. proposes a discursive approach to organisational culture.

3.1. Knowledge communication

This research project builds on the distinction between tacit and explicit knowledge, though as mentioned these are seen as end points of scale where more tacit or complex knowledge is both more difficult to express and requires more effort to apply (Nonaka & von Krogh, 2009). Arising within the natural sciences, in the work of Polanyi (1966), the divide between tacit and explicit dimensions of knowledge has been widely adopted by influential research strands within KM (Davenport & Prusak, 1998; particularly Nonaka & Takeuchi, 1995; E. Wenger, 1998). Duguid’s (2005) vivid example of the importance of the tacit dimension is the amount of information needed to codify even a simple process such as tying a shoelace, and such an instance of codified knowledge would be of little use to someone trying to learn the practice involved in the process. Nonaka’s epistemology at the individual level is based on a view of knowledge as not only individual but subjective, based on belief and values (Davenport & Prusak 1998, Nonaka 1994). At the social level, knowledge is seen as a living entity constantly undergoing change and transformation (Davenport & Prusak 1998, Takeuchi & Nonaka 1994). This epistemology originates previous theories of knowledge as a continuous social construct (e.g. Berger & Luckman 1966), as well as in theories of evolutionary epistemology (e.g. Heylighen 1993). Even though Nonaka’s emphasis is on knowledge-creation rather than communication, Nonaka’s and his associates’ (1991; Nonaka & Takeuchi 1995; Nonaka, Konno & Toyama 2001; Nonaka & Toyama 2003, 2005; Nonaka, Toyama & Konno 2009) theories of the knowledge-creating
company are important for understanding how and what happens when knowledge is communicated successfully.

Nonaka furthers Polanyi’s (1966) theory by adding the ontological dimension of individual and group (or organisation), thus shifting the focus from the individual level to an interplay between the individual and the social level in accordance with Heylighen’s epistemology (1993). Nonaka sees the conversion between the epistemological and ontological levels as a dynamic process of sozialisierung, externalization, combination and internalization (the ‘SECI model’) ideally recurring in an on-going knowledge spiral funnelling out and back between tacit and explicit knowledge at individual, group or organizational level. There has been criticism of the SECI model for being too vague and lacking empirical evidence for outside of a Japanese context (Lehtonen & Kampf, 2009), but as pointed out by Kampf and Lehtonen, the theory of the knowledge-creating firm does offer a lens to help us understand how “people share and create knowledge” (2009, 187).

Nonaka’s SECI model thus requires an on-going knowledge exchange for knowledge to survive. This should place communication of knowledge at the centre of any knowledge management theory. Central to this knowledge communication is the specific use of language in a given knowledge exchange (Kastberg, 2010). Nevertheless, knowledge communication has not been given the attention it deserves in Nonaka’s and his associates’ theories of knowledge-creation (Lehtonen & Kampf 2009). The same can be said of Wenger’s seminal theories of knowledge and learning in the context of Communities of Practice presented in the following. The methodological lens presented in the next section starts by looking at these linguistic aspects of knowledge communication.

Wenger focuses on learning rather than knowledge as such, but from my perspective, knowledge and learning are two sides to the same coin as learning can be considered as the dynamic act of acquiring knowledge (Nonaka 1991, Wenger 1991). Such a synthesis is supported by Blackler (1995), who combines Wenger’s and Nonaka’s perspectives with the introduction of the concept of ‘knowing’, thus emphasising the dynamic process knowledge communication in which knowledge is not transformed rather than transferred in the knowledge communication process. Nonaka has later tried to differentiate his theory from Wenger’s by claiming that Wenger focuses more on tacit knowledge as a foundation for social practice, while Nonaka’s own theories focus more on organizational knowledge creation and innovation (Nonaka & von Krogh, 2009). Nonaka and von Krogh (2009) argue that Nonaka’s knowledge creation theory, contrary to the Community of Practice theory, builds on the strengths of combining different knowledge perspectives and interests. Thus, using the SNA terminology of Granovetter (1973) presented in the introduction, Nonaka and von Krogh (2009) build on the strength of weak ties, while Wenger’s Community of Practice theory of learning builds on strong ties. So Wenger’s (and co-authors’) theories and Nonaka’s (and co-authors’) theories build on different relation types in their theories. Neither Wenger nor Nonaka recognise this fundamental difference in their knowledge perspectives, but seems that by using SNA theory as emulsifier the two theories can be combined, while recognising Nonaka’s and von Krogh’s (2009) arguments about the difference.
Wenger’s theory is rooted firmly at the social level, as he claims that any meaning experienced by individuals arises from a duality (not a dichotomy) of participation and reification (1998). Participation is defined as social interaction, the meaningful and identity-shaping act of “recogniz[ing] ourselves in each other”, and reification as the reproduction of our knowledge for a social context, the equally meaningful and identity-shaping act of “project[ing] ourselves onto the world” (Wenger 1998, 58). But despite his focus on the social level, the act of participating seems strikingly similar to Nonaka’s notion of socialization, while reification seems similar to the process of converting knowledge from tacit to explicit, i.e. the externalization of Nonaka’s SECI model. Wenger insists on the community of practice (CoP) as the social space where people find meaning, establish identity and attain learning (1998). Community here refers to a particular social context, or shared space for the exchange of knowledge within a particular field, the domain of the community (Wenger 1998, 2002). This shared space for knowledge exchange is reflected in Nonaka’s and his associates’ concept of Ba (Nonaka, Konno, & Toyama, R. 2001; Nonaka & Toyama 2003; Nonaka, Toyama, & Konno 2009). Similarly, Lehtonen and Kampf (2009) have argued for a close link between Wenger’s participation and reification (1998) and Nonaka and Toyama’s (2005) participation and dialogue.

The identity of the community is expressed through the shared repertoire of the community (Wenger 1998, pp. 82). In this shared repertoire, words may take on a special meaning shared only by and helping to define the community. In this sense, the concept of shared repertoire is in vein with the school of thought known as LSP (Language for Specific Purposes) defined as “the discourse of/in/by trades, professions, and disciplines” (Kastberg 2010, 60). In addition to the community, the shared practice is also essential to Wenger’s conception of knowledge exchange. Practice here should be understood as the notion of “doing, but not just doing in and of itself. It is doing in a historical and social context that gives structure and meaning to what we do.” (1998). This quote expresses not only the importance of applying knowledge within the social context (cp. Nonaka’s epistemology above), but also the situatedness of knowledge within time and space; that which constitutes meaningful knowledge in one social setting and time may be useless for another time and place (Heylighen 1993).

Wenger defines CoP in opposition to teams in that the focus in the CoP is on contributing to the domain, and therefore implicitly shares and creates knowledge, while a team has a task focus, and therefore implicitly emphasises application of existing knowledge (2002). The CoP is thus interest-driven and largely autonomous, while the team is objective-driven, and to a large extent is being monitored and measured against deliverables (Wenger 2002, 2004). Project teams have the further disadvantage that knowledge accumulated during a project may be lost when the team disperses. In short, CoP are the stable element in an ever-changing organization, and Wenger claims that these traits mean that a well-functioning CoP delivers “value to the organization, to the teams on which community members serve, and to the community members themselves.” (2002, 59). Nevertheless, the nature and extent of the impact of CoPs on the performance of teams has not been tested empirically. The methodology set out in the next section is an attempt to remedy this with particularly emphasis on virtual project teams, which have a particular need for a stable cross-divisional element such as a CoP.

Wenger’s original idea of CoP (1991; 1998) emphasised the importance of face-to-face meetings in day-to-day relations, but the reality in a global company is often that the CoP, facilitated by technology,
becomes virtual. In virtual communities of practice (VCoP), technology should be considered as a tool to facilitate knowledge communication, not as an end in itself. Thus, the virtual community of practice should reflect the perception of knowledge as a living entity to achieve a successful knowledge communication with the potential to build relationships and shared identity. Nevertheless, Hanisch and Churchman (2008) in their study of cross-border VCoPs identified a number of barriers in communicating knowledge through ICT; responses indicated that the lack of chance face-to-face meetings posed a challenge to the free flow of knowledge. This tendency is also noted in Wenger, McDermott and Snyder’s (2002) analysis of what they term ‘distributed communities’ (p. 116). In relation to distributed communities, Wenger, McDermott and Snyder emphasise the importance of a more intentional effort, for example by local community observers intervening to forge links between local divisions and keeping the community present in consciousness. Another means of overcoming this barrier is by ensuring diversity in ICTs employed in sustaining the community, using videoconferences and meetings to support the written communication of communities and mails (Davenport & Prusak 1998; Wenger 2002).

Highly relevant to (but unacknowledged in) both Nonaka’s and Wenger’s theories is the notion of meta-knowledge; the knowledge we have about what other people know. This is what the social psychologist Daniel Wegner (1986, 1995; Wegner, Erber, & Raymond, 1991) has termed the Transactive Memory System. Looking at small groups and later couples, Wegner discovered that rather than learning what other people know, people tend to build knowledge about what other people know. Knowing who to go to, to solve a problem or get expert advice may often be just as important as having the knowledge yourself. According to Wegner (1986) group members thus carve out domains of expertise and responsibility, and build knowledge about who knows what in the group.

3.2. The knowledge communication paradox

In all the above knowledge theories, a knowledge redundancy is thus built over time; slowly community or team members build mutual knowledge and get to know what the others know. Using Nonaka and Takeuchi’s terminology, ‘Knowledge redundancy’ is built, but Nonaka and Takeuchi argue that despite the typically negative connotations of redundancy in traditional management literature, an overlap in employee knowledge is a necessity for knowledge and innovation to thrive. However, findings from studies using Social Network Analysis (SNA) seem to contradict these theories. In SNA theory the strong knowledge relations within a Community of Practice are termed strong ties. But Granovetter (1973) argues that the knowledge redundancy in a group with strong ties means that to gain novel knowledge, people need to go to relatively weak ties, because the weak ties have access to different knowledge networks; hence the title of the article, “The Strength of Weak Ties”. Granovetter bases this finding on a study of how people found their current job. Most often information about new job openings came from weak ties (defined in that study on the basis of communication frequency with a given tie).

It seems paradoxical that, according to Wenger, you need strong ties to communicate knowledge effectively, but that on the other hand the stronger the tie, the less likely it becomes that the tie will lead to novel knowledge. This paradox has been examined in more recent studies. For example, in a study of cross-boundary product development in an electronics company, Hansen (1999) found that weak ties were most
effective in simple projects where they facilitated cross-unit knowledge access, but Hansen also found that weak ties tend to slow down the communication of complex knowledge. Complex knowledge would in Nonaka’s terminology be more tacit knowledge.

The paradox has also been examined in a study focusing on the mediating effect of trust on the receipt of “useful knowledge” (Levin & Cross, 2004). “Useful knowledge” in the study is defined as respondent perception of the usefulness of knowledge received. The study finds that strong ties are only more effective in providing useful knowledge, because they are more trusted than weak ties. When controlling for perceived trustworthiness, weak ties were more effective than strong ties in providing useful knowledge (Levin & Cross, 2004). Like Hansen (1999), Levin and Cross (2004) found that strong ties were more effective at providing more tacit knowledge, but only if there was a high level of ability based trust (see next section for a definition of this concept. Two points of high interest to this research project emerges from Levin and Cross’ study:

1) Trust is paramount to communication of knowledge regardless of tie strength.

2) The most useful knowledge was received from trusted weak ties.

3.3. Trust

Trust in this project refers mainly to interpersonal trust, or what is sometimes termed ‘horizontal’ trust (Fage-Butler, 2011). However, trust may also be vertical in the sense that we can trust institutions, and in that sense the organisational context of individual team members may also affect levels of trust in a virtual team at a more abstract level. My initial assumption in the early stages of the project was that trust functions as a filter between the individual level and the social level. This assumption is based on the belief that if I trust a source of knowledge, regardless whether it is a person, an organisation or a website, then I have a propensity to quickly accept knowledge from that source as valid. Equally, if I trust another party, I am more willing to attempt to give voice to my more tacit knowledge. These assumptions are supported by Chowdhury (2005) and Staples and Webster (2008), and follow logically from the seminal, though not exhaustive, definition of trust proposed by Mayer, Davis and Schoorman (1995, cited 4744 times according to Google Scholar, employed by e.g. Abrams, Cross, Lesser, & Levin, 2003; de Jong & Elfring, 2010):

[Trust is] the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. (Mayer, et al., 1995, p. 712).

As mentioned in the introduction, there are countless other definitions of interpersonal trust, but there is a tendency towards consensus on viewing trust as the willing exposure to vulnerability or risk based on beliefs about another party. Mayer, Davis and Schoorman (1995) also address risk specifically:

“There is no risk taken in the willingness to be vulnerable (i.e., to trust), but risk is inherent in the behavioral manifestation of the willingness to be vulnerable. One does not need to risk anything in order to trust; however, one must take a risk in order to engage in trusting action.
The fundamental difference between trust and trusting behaviors is between a "willingness" to assume risk and actually "assuming" risk.

Linking this to the knowledge theory presented in the previous section, it seems that attempts at communicating tacit knowledge require trust, because we open ourselves to criticism from others thereby becoming vulnerable. This assumption is supported by McNeish & Mann’s (2010) literature review of the relation between trust and knowledge finding strong support for trust as an antecedent of knowledge sharing. High trust may therefore lead to faster knowledge communication. Put in simple terms by Steven R. Covey, when trust goes up, then speed goes up and cost comes down (2006).

My trust model in figure 1 below was based on a systematic search on virtual teams and trust in Scopus. I identified the trust concepts cited in the studies, then went back to the original articles presenting the concepts, and constructed the model in figure 1 on the basis of those concepts. The model has been useful in my interviews to probe deeper into any beliefs associated with actions or behaviour described by interviewees. In the following, I outline each of the trust types presented in figure 1. In the model, I incorporated Nooteboom’s (2011) distinction between trust as beliefs and trust as behaviour or actions. In the research design, building on interviews, this distinction is useful as it provides a lens through which to examine actions (observed by me or described by interviewees) as expressions of trust.

The trust model in figure 1 is an idealised system which should be considered as an open system influenced by other social factors omitted for the sake of clarity. The corporate context is included, both
because it is a more immediate concern in this research project that the societal, and because Mayer, Davis and Schoorman (1995) argue for the impact of contextual factors on interpersonal trust.

The perspective of the individual is adopted in the trust model (the ‘trustor’ in figure 1), therefore the beliefs and trust propensity are omitted for the trustee, since these cannot be perceived by the trustor. The relation between the two individuals is a dynamic and reciprocal one as indicated by the double arrows, and the terms ‘trustor’ and ‘trustee’ are only rhetorical means to emphasise where the perspective is put, and to separate the two individuals in the following argumentation; in practice, an individual is both a trustor and a trustee. The double arrows between the three main boxes indicate that individual’s dyadic trust relation with another individual (the trustee), and the impact of the corporate context on both individuals.

**Individual propensity**: based on behavioural research findings, McAllister (1997) suggests that individuals have different levels of propensity to trust, influenced primarily by upbringing and culture, leading to a general tendency to trust other people. This is supported by Mayer, Davis and Schoorman (1995). This trust propensity is sometimes termed ‘general trust’ and is measured in the General Social Survey using one Likert scale item. According to Glaeser, Laibson, Scheinkman and Soutter (2000), this measure is too vague to be useful in research. It is included here only to indicate that trust beliefs are not influenced solely by the trust behaviour of the trustee, but also by the individual propensity to trust other people. However, the trust propensity of an individual may change if trust beliefs consistently confirmed or let down by the behaviour of others, which underlines the impact.

Related to trust propensity, are the concepts of *swift trust*. Swift trust was introduced by Meyerson, Weick, & Kramer (1996) as concept to explain findings that teams who have never met may still exhibit trust behaviours. A very similar concept, *initial trust*, was introduced by Mcknight, et al. (1998) to explain a similar finding. Swift, et al., 1998. Although swift trust is fragile and temporary, studies have indicated that high levels of swift trust do provide performance advantages for virtual project teams (Jarvenpaa & Leidner, 1999; Kanawattanachai & Yoo, 2002; Robert Jr, Denis, & Hung, 2009; Zolin, Hinds, Fruchter, & Levitt, 2004). However, these researchers have not examined how levels of swift trust can be raised. Nor do they offer solutions to overcome the temporal and fragile nature of swift trust in short-term teams. It seems logically sound to assume that individual propensity has a high impact on swift trust, since this trust does not originate from knowledge about the trustee. However, vertical trust originating in the organisational context may impact on swift trust towards other members of the organisation. For example, one of my Danish interviewees indicated that it was always a pleasure to work with employees from LDC Benelux, because LDC Benelux had such excellent work flow management processes.

**Trust beliefs**: Both McAllister (1995) and Mayer, Davis and Schoorman (1995) argue that trust is based on beliefs about the other, but they use different though complementary concepts to explain the basis of those beliefs. McAllister’s concepts describe the origin of trust within the trustor as being either *affect-based* (emotional) or *cognition-based* (rational, knowledge-based). Mayer, Davis and Schoorman’s concepts focus more on how the trustee’s behaviour provides foundation for different types of trust beliefs. The two types are thus complementary, though there is some overlap. *Affect-based trust* seems to cover the familiar notion
often described as ‘clicking’ with someone or ‘having a good chemistry’, while cognition-based trust is based on knowledge about the other person’s previous behaviour; a person’s ‘track record’ of abilities, competence and dependability leading to well-founded expectations about future behaviour from that person, regardless of whether one has an emotional (affect-based) tie with that person.

Mayer, Davis and Schoorman (1995) propose the concepts ability, integrity and benevolence based on a review of trust literature at the time. Mayer, Davis and Schoorman (1995) argue that the three concepts “appear to explain a major portion of trustworthiness.’ (717). Ability refers to trust in another person’s competence within a given context; an individual may have high abilities in some areas while being incompetent in others. Integrity refers to the trustor’s perception of the trustee’s tendency to ‘walk his talk’. Mayer, Davis and Schoorman (1995) emphasise that integrity beliefs are high when trustor and trustee share value systems. Thus, a consistently ruthless person may be considered to have a high integrity by another ruthless person. Finally, Benevolence is the perception of “the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive.” (Mayer, et al., 1995, p. 718). Benevolence seems to be the one of Mayer, Davis and Schoorman’s concepts which is closest related to McAllister’s affect-based trust, because it rests on a feeling of a close connection: “Benevolence suggests that the trustee has some specific attachment to the trustor. […] Benevolence is the perception of a positive orientation of the trustee toward the trustor.” (Mayer, et al., 1995, p. 719).

Trusting behaviour: Mayer, Davis and Schoorman (1995) emphasise the connection between trusting behaviour and trusting beliefs. They argue that the behaviours of the trustee are the basis on which the trustor builds trusting beliefs about the trustee. Reciprocally, the trustor’s beliefs have a high impact on whether the trustor engages in trusting behaviour towards the trustee. For example, if the trustor believes in (trusts) the trustee’s ability, the trustor is likely to exhibit trusting behaviour, such as asking for advice or giving certain responsibilities to the trustee. In practice the all 5 different trust beliefs (cognition, affect, ability, integrity, and benevolence) will interact to support split-second decisions about whether to engage in trusting behaviour.

Trusting behaviour, therefore, is both an antecedent and an outcome of trust, as argued by Baskerville and Nandhakumar (2007).

3.4. The Trust - Knowledge paradox

Following from the discussion of knowledge communication and interpersonal trust, a trust – knowledge paradox arises. The behavioural psychologist McAllister (1995) argued that trust is “based on the expectation that one will find what is expected rather than what is feared”. This supports the definition of trust as exposure to risk or vulnerability argued above. But if trust beliefs are built on knowledge about the other party (as outlined in section 3.3.), then there more knowledge we have about that person, there more certain we are that our beliefs are well founded. The more well founded the trust beliefs are, the less risk is involved in the relation. Thus, knowledge about the other party reduces the risk involved in engaging in trusting behaviour towards that part.
Therefore, the more knowledge we have about another party, the less need is there for trust. And paradoxically, the need for trust is highest when there is no knowledge about the other party on which to base that trust. McAllister (1995) sums this paradox up beautifully: "Given total knowledge, there is no need to trust, and given total ignorance, there is no basis upon which to rationally trust" (p. 26). This has serious implications for short term virtual teams in particular, where there is typically little previous knowledge about other team members. To leverage the strength of these weak ties, particularly when more complex knowledge is involved in the team tasks, trust is needed, but given the short term nature of the team, there is no basis on which to found that trust. Not unless:

1.) the corporate context facilitates the building of a Transactive Memory System (as outlined in section 3.1.) early in the team life cycle, thereby building knowledge on which founded trust beliefs, or
2.) the corporate context can raise the swift trust of the virtual team enough for the virtual team to initiate knowledge relations and trusting behaviour leading to more lasting trust beliefs (as outlined in section 3.4.

Both solutions to the trust – knowledge emphasise the impact of the corporate context on virtual team knowledge and trust relations, thereby underlining the need for the present research project. Coercion exerted by the organisational context may also force behaviour similar to the trusting behaviours outlined in figure 1, but forced behaviour seems unlikely to support efficient knowledge and trust relations.

3.5. Virtual teams

Constance Kampf and I are currently conducting a review of workplace case studies looking at trust and knowledge sharing in virtual teams (Petersen & Kampf, Forthcoming). Our findings show that while there is some tendency in the literature examined towards arguing for the advantages of face to face interactions over technology mediated interactions, there are also studies looking at the topic with more nuances. There is a recognition that it is difficult to speak with any accuracy about virtual teams as opposed to face-to-face teams; nearly all teams today operate along a continuum of virtualization and geographic dispersion (Al-Ani, et al., 2011). Nevertheless a number of the studies still build on media richness theory (e.g. Golden & Raghuram, 2010; Kirkman, Rosen, Tesluk, & Gibson, 2006), which establishes a hierarchy of ICT interactions, where face-to-face interactions is the top of the scale providing the ‘richest’ interactions by way of sound and visual quality and full access to gestures and body language between all participants. At the other end of the scale are so-called ‘leaner’ media such as email offering only text-based asynchronous communication. But other studies contradict the theory, finding strong relations supported by lean media (Casey, 2010; e.g. Kotlarsky & Oshri, 2005)

ICT mediates communication in virtual teams, though according to McNair & Paretti this mediation is far from neutral; building on Winner’s (1999) analysis of political artifacts, they argue that technology shapes roles, identity and division of labor within the activity system. Thus, unlike media richness theory, technology is not neutral, but can be shaped to manipulate (for good or for evil) the “relational space of the activity system” (McNair & Paretti, 2010, p. 328). Thus different communication technologies elicit particular relations which structure how knowledge is shared and constructed in the virtual team.
It seems that research studies finding problems in virtual teams are really finding problems in the virtual team context, but this is not recognized as the focus is on the virtual team level. For example, workflow management, structure of team meetings, team familiarity and the context of previous relations in the organisation are all brought into the virtual team context. To virtual teams operating in organisational contexts with competition between virtual team fractions, such as in the study by Casey (2010) and McNair and Paretti (2010), virtual teams tend to fail. In contexts with healthy existing trust and knowledge relations, and well-structured workflow and project management processes, virtual teams thrive. An example of the latter is the software company studied by Al-Ani, Horspool and Bligh (2011). Interviewees in their study did not report a big difference between face-to-face teams and virtual teams. Indeed half the interviewees had difficulty recalling a project which had been entirely collocated. Al-Ani, Horspool and Bligh (2011) found no in-group and out-group behaviour (dispersed members being cut-out from the collocated part of the team). Rather they found evidence of shared identity among collocated and dispersed members. Al-Ani et al. (2011) note that this distinguishes their study from previous studies. Additionally, team leaders were located according to convenience rather than to ensure higher collocation, suggesting that management do not distinguish between collocated and distributed members. Technology was considered to be ubiquitous to both collocated and virtual teams, and team leaders did not necessarily use rich media to establish a virtual presence supported by team members.

The most prevailing patterns across the studies was the need for face-to-face interactions early in the team life cycle, and the need for a fixed rhythm of interaction, preferably involving occasional face-to-face interactions (supported by almost half the studies in the review).

To sum up, the context of the virtual teams, rather than the technology used, seem in the literature to impact on the success of virtual teams by moderating the trust and knowledge relations in the teams. Further, the structure of meetings, including a rhythm of face-to-face to face interactions, in addition to clear structures in the virtual team tasks impact on trust and knowledge relations in virtual teams.

3.6. Organisational culture

As a major aspect of organisational context I’m suggesting organisational culture. Finding an approach to this highly contested and fuzzy term is a current challenge. A study of Joanne Martin’s (2002) book on the topic in the autumn will hopefully solve some of the issues. I’m currently working with a micro-perspective on culture as proposed by Fine (1995), who aims “to examine, in particular, how cultural traditions and social cohesion are created, expressed, and made real through discourse.”

Culture in this perspective develops through on-going interaction within communities of any variety (e.g. the subjects of a nation-state, members of a religion, computer gamers, engineers, employees of a particular organisation, etc.). Individual identity is thus constantly moulded and shaped by the culturally embedded discourses which the individual is subjected to. In James Gee’s critical discourse theory, such cultural discourse is called (D)iscourse (with a big “D”), as opposed to (d)iscourse as specific acts of communication; context dependent language-in-use (Gee, 2011). From the individual perspective, identity building becomes, at best, a dynamic and on-going interaction with and negotiation of these (D)iscourses. At worst, individual identity becomes a product of social control exerted by social groups; an example of the
latter is Harrison White’s (1992) analysis of such diverse cases as playgrounds and judicial systems, showing how social control can shape individual identity:

“...In life we continually have to restructure our understanding of what others are, and of what control is, even as we devise accountings for ourselves and for others who are in some relation to us. [...] Persons should be derived from, rather than being presupposed in, basic principles of social action. One can usually impute ends from actions, but these “ends” often are, despite protestations, mere by-products of previous history as adapted to current circumstance.” (p. 6-8).

The extent to which we are in control of shaping our identity is not the issue here, however, but the above arguments show how socio-cultural discourses shape our understanding of who we are, and influence how we act; in principle, how we make sense of the world. This understanding of culture as discourse is also evident in the work of Carbaugh (2007), who uses the term “cultural discourse analysis”.

The combined use of Fine and White (sociologists), Carbaugh (intercultural communication), and James Paul Gee (sociolinguist), situates this understanding of culture as multi-disciplinary, despite conventional views of critical discourse as limited to linguistics and rhetorics (e.g. David 2005). Gee (2011) emphasises that “making visible and recognizable who we are and what we are doing always involves a great deal more than ‘just language.’ [It involves] acting-interacting-thinking-valuing-talking-(sometimes writing-reading) in the ‘appropriate way’ with the ‘appropriate’ props at the ‘appropriate’ times in the ‘appropriate’ places.” (p. 34. Formatting from the original).

4. Methodology

The main method employed in the project is interviews, and a major methodological concern has been how to use the interview format to gain knowledge about relations between the interview person and employees not present in the interview situation, except as linguistic constructs in the dialogue between interviewer and interviewee.

Individual interviews were selected over focus group interviews, as I assumed that interviewees would construct colleague identities more freely if those colleagues were not present, and as the preliminary findings presented in the next section indicate, this assumption seems to be sound. Furthermore, according to SNA ties (i.e. relations) may not be reciprocal: one interviewee may (and did in my data) identify a colleague as a friend, though the colleague when interviewed did not share this view; such findings might not have been exposed had group or focus group interviews been employed.

4.1. Analytical lenses - Operationalizing organizational context and trust-based knowledge communication

This section outlines the theoretical lenses used to operationalize and analyse the elusive concepts of organizational context and trust-based knowledge communication.
**Discourse analysis**

The interviews will be analysed using James Gee’s frame work for discourse analysis. This focuses on how people construct relationships, identities, practices, etc. in language, but as mentioned in section 2, this constructivist approach does not mean that findings are arbitrary. On the contrary, the socially constructed reality is exactly that: reality. It is the social reality which we build (construct) on the foundation of the physical reality. So the interviews, followed by a critical discourse analysis, a considered as able to provide a glimpse of the social reality/ies in which the interviewees are emerged.

James Gee’s theories of critical discourse analysis are used in the project due to the strong emphasis on the effects of language in use. Gee’s theory identifies seven ‘building tasks’, each of which can be considered as a part of the social reality we construct when using language (see table 1 for an overview). When referring to particular building task in the following, I will capitalise it, e.g. Relationships. In analysing the interviews for this project, I’m particularly interested in how the interviewees construct identities for their colleagues, and how they talk about relations in the organisation. This may both reveal knowledge about trust-based knowledge relations, and about the organisational context; these are reflected by the building tasks Relationships and Identities. The organisational context may also be revealed in the practices represented by narratives in interviews and enacted in the meetings observed.

Yet as pointed out by Gee all seven building tasks may relevant to a higher or lesser degree for any given statement. Thus, an interviewee statement about another employee in relation to a given project may both construct information about identities and relationships, but may also construct information about power and distribution of social goods (politics), render particular information more salient (Significance), and construct information about Practices within the team, project or the organisation in general.

Using Gee’s discourse analytical framework, presented in the next section, it seems possible to use interview data to analyse employee perceptions of organisational culture(s) as expressed through particularly Gee’s building tasks Practices and Identities, though the others are also significant, e.g. cultures may privilege particular distributions of social goods (Politics), or specific ways of knowing (Sign Systems and Knowledge). Thus culture in this perspective is understood as individual perceptions of being part of larger communities, whether these are national, professional or organisational (see the discussion in section 3.6.).

Table 1 below provides an overview of all 7 building tasks, relating these to the research project.

<table>
<thead>
<tr>
<th>Building tasks</th>
<th>Significance</th>
<th>Practices (activities)</th>
<th>Identities</th>
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<tbody>
<tr>
<td></td>
<td>- What is emphasised as significant, or made salient in the text? What is de-emphasised?</td>
<td>- These can be socially, culturally or institutionally defined.</td>
<td>- In the interview situation, the interviewee constructs identity for both self and others. In relation to organisational context, I’m particularly interested in how the interviewee identifies with the organisation and with colleagues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- What practices are (re-) enactment by employees, and how do they reflect shared contexts locally and globally?</td>
<td></td>
</tr>
</tbody>
</table>
How do interviewees construct identities for others and for themselves? How do these particular constructions impact on the corporate context?

Relationships
- In talking about specific projects and tasks, the interviewees construct relationships with colleagues, which may reveal information about trust/knowledge relations and power distribution in teams and in the organisation.
- How do the relationships constructed seem to reflect trust/knowledge relations between employees? How do the relationships constructed reflect distribution of power?

Politics (the distribution of social goods)
- What is being constructed as “right”, “normal” or “good”, and how does this reflect a corporate context conducive to trust/knowledge relations?

Connections
- Connections between things often need to be established through language. In particular I’m interested in whether interviewees build connections between aspects of the organisational context and their relationships and identity in the organisation.
- How does the interviewee build connections between items during the interview? What is made relevant or irrelevant to other things?

Sign Systems and Knowledge
- Language privileges some sign systems and ways of knowing over others.
- How do employees talk about knowledge, and to what extent do they privilege explicit or implicit knowledge?

Table 1: overview of Gee’s (2005) building tasks adapted to the project

Social Network Analysis
Social Network Analysis (SNA) today is based on a mathematical (graph theory) approach to analysing relations between people. Questionnaires are often used to create relational data by asking fairly simple questions such as “who do you go to for help?”, often followed by an indication of frequency using Likert scales. Yet the method has its origin in anthropology, and part of my contribution in the PhD thesis may be to move it back in that direction. As stated by the ethnographer Alvin Wolfe (1978): "Ethnographic experience is an excellent grounding for a network orientation, whereas the institutional and survey methods in other disciplines do not lead naturally and directly to a network orientation" (p. 57). My aim is to analyse qualitative data from interviews and meeting observations using SNA graph theory tools, which through visualisation and analysis of the trust and knowledge networks at LDC may reveal information about the trust and knowledge networks which cannot be seen from the discursive perspective.

An example of applying SNA in the project is the trust model in figure 1 above. This can potentially be expanded to include other trust relations, if findings from Social Network Analysis are added; e.g. Granovetter’s (1973) findings would suggest that trust in a strong tie relation may ‘rub off’ on ties known only via the trusted strong tie. Thus a strong, trusted tie between A and B, and between A and C (figure 2 below) will most likely lead to a weak trust tie between B and C (see figure 2), because B’s trust in A will rub off on his perception of C and vice versa. According to Granovetter, figure 2 is unlikely to exist for long in real life, because A will eventually make B and C aware of each other.
4.2 Research design

Data collection is based on a combination of observation at LDC Denmark and 10 semi-structured interviews with LDC virtual team members, 7 with ILD employees in Denmark, 1 in Sweden and 3-5 from the Netherlands. Six interviews have been completed so far, 5 with LDC Denmark employees and 1 with an employee from Benelux. The aim in the field study is to gain a deeper understanding of how the corporate context affects trust and knowledge relations in the virtual teams in local branches of LDC, (name of the company changed to protect employees).

To understand this research problem from a multi-level perspective, I propose the following research questions.

<table>
<thead>
<tr>
<th>Research question</th>
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<tr>
<td><strong>Organisational level:</strong></td>
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<tr>
<td>1. What does the organisation locally and globally do to support knowledge and trust relations in virtual teams?</td>
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<tr>
<td>2. How do local and global management processes help or hinder knowledge and trust relations in virtual teams?</td>
</tr>
<tr>
<td>3. How do local and global organisational practices, such as meetings and work flow management affect trust and knowledge relations in virtual teams?</td>
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<tr>
<td><strong>Team level:</strong></td>
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<tr>
<td>4. How do frequency and type of communication affect trust and knowledge relations in the virtual teams?</td>
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<tr>
<td>5. How and to what extent does the availability of face-to-face interactions impact on trust and knowledge relations in the virtual teams?</td>
</tr>
<tr>
<td>6. How do team structures and hierarchies support or hinder trust and knowledge relations in the team?</td>
</tr>
<tr>
<td><strong>Individual level:</strong></td>
</tr>
<tr>
<td>7. How do employees see the organisational context as impacting on their projects and relations (virtual and face-to-face)?</td>
</tr>
<tr>
<td>8. How do employees consider the impact of technology on trust and knowledge relations in the company?</td>
</tr>
<tr>
<td>9. How do employees perceive knowledge and trust relations within specific projects?</td>
</tr>
</tbody>
</table>

In short, I used Mason’s (2002) and Kvale’s (2009) advice to turn the research questions into a semi-structured interview guide, linking interview questions to research questions, and then organising interview questions into themes. The aim in the interviews was to get interviewees to talk about specific projects and about their day-to-day work in the organisations in the past week. I used an ego-centric chart in the

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**Figure 2: Triad relation (adapted from Granovetter, 1973).** Lines indicate strong ties while a letter and a point indicate an individual in the network. Granovetter argues that the above triad is unlikely, because B and C are unlikely to remain ignorant of each other due to their shared strong tie with A. A will eventually make B and C aware of each other.
interviews to get interviewees to map their relations in the teams and projects they talked about. This both allowed me to probe deeper into how relations with an individual differed in the different team and project context, and allowed a discussion of differences between the different networks constructed on the charts. The trust model presented in section 3.3. was useful in my interviews to probe deeper into any beliefs associated with actions or behaviour described by interviewees.

The interviews are currently being transcribed and will be analysed using a combination of Social Network Analysis (SNA) tools (using the software program UCINET) and James Gee’s framework for discourse analysis (Gee, 2011). As mentioned in section 4.1., Gee focuses on how people construct relationships, identities, practices, etc. in language, but despite this constructivist approach, but this does not mean that it is arbitrary or relativized. On the contrary, the socially constructed reality is exactly that: reality. It is the social reality which we build (construct) on the foundation of the physical reality. So the interviews, followed by a discursive analysis, should provide a glimpse of the reality/ies in which the interviewees are emerged. SNA tools will allow a graph theoretical analysis of the knowledge and trust relations in the organisation, which may reveal views on the data not found in the discursive analysis.

5. Preliminary findings

Findings from my review of knowledge management, trust and virtual team literature was presented in section 3.1., 3.3. and 3.5. By combining those findings with findings from social network theory, the paradoxes presented in section 3.2. and 3.4. emerged. I plan to turn these two sections into research articles when my interview data has been analysed in the autumn of 2012.

I’m also working with Constance Kampf on a literature review of workplace studies of knowledge and trust in virtual teams (Petersen and Kampf, forthcoming). In the autumn of 2011, I participated in seminars on a new type of literature review, the integrative literature review, which is more systematic and transparent in the methodological approach to literature review.

Additionally, the empirical work conducted so far includes:

- Initial interviews with LDC managers in Denmark, Benelux, Switzerland and the UK to get an understanding of the company and ensure organisational support.
  - LDC UK and Switzerland did not wish to participate in the project, while LDC Denmark (also managing Sweden) and Benelux have agreed to participate.
- A document analysis of the LDC online space combining user profiles, wiki, blogging and emailing technologies.
  - The aim was to answer the now abandoned research question: “To what extent does the corporate online space support a Community of Practice (CoP) supporting trust-based ties across the organization?” As outlined below, I discovered that it did not support CoPs in the organisation.
- 5 semi-structured interviews with employees in LDC Denmark, and one semi-structured interview with a LDC Benelux employee.
• Each interview lasted approximately 1½ hours and the interview guide emphasised an indirect approach to get data on trust and knowledge through conversations about specific projects and day-to-day work relations. I expect to conduct 2 more interviews with dispersed members of LDC Denmark, one with a Swedish LDC consultant and 3-5 with LDC Benelux members. The interviews are currently being transcribed and analysed, but tentative patterns emerging after listening through the interviews are presented below.

• Approximately 20 hours of meeting participation and observation.

• This has been important to supplement the identity constructions in the interviews, and to provide data on the organisational context in LDC Denmark. The amount of ethnographic data was limited by time constraints rather than methodological constraints, and the project would benefit from more ethnographic data from observations and meeting participation. Virtual team interactions will be studied mainly through multi-modal document analysis (recordings of online meetings, emails, memos, etc.), which may compensate for lack of physical presence in the company.

Corporate online space: Initially in the project, I assumed that the corporate online space would be an important aspect of the corporate context. The online space was redesigned in 2009 to include personal profiles for each employee, and facilitating blogging and document sharing across the organisation. I assumed that this might support Communities of Practice across the organisation with employees sharing experiences and providing support for each other. But my analysis of discussions, blogs and documents at ‘Connections’ undertaken in the autumn of 2011 has suggested that knowledge communication in this community is mainly top-down with extensive knowledge repositories of the organizations Power Point presentations and course materials, and extensive managerial blogging. However, discussions between LDC practitioners (i.e. the consultants conducting presentations and training programmes for LDC clients) seems limited, and little personal knowledge is being shared. Initial conversations with employees at LDC Denmark in 2011 has revealed that LDC ‘Connections’ is not being used as a platform for exchanging knowledge and building relations horizontally across the organization. This has been confirmed in a semi-structured interview with the Communications Officer at LDC who explained that ‘Connections’ is not working as well as expected, and the company is investing in an improvement of the community.

Improvement is proceeding slowly and has consisted mainly of a reorganisation of the document database into a wiki. Symptomatic for the online space, this wiki has been redesigned and written by centrally placed employees, and local consultants with day-to-day knowledge of how the organisations products work in practice do not use the participatory possibilities provided by wiki technology.

However, interviewee 6 explained that closed groups exist within the online space. One of these has been constructed in order to start a de-centralised, horizontal knowledge conversation between a few consultants hand-picked from across the organisation. These particular consultants have been selected, because they are known for not only using the corporate solutions, but adapting and adding to these based on their clients’ needs. Rather than examining the whole online space, as initially planned, I will focus on analysing the very prolific communication ensuing in the online space of this closed group, which may develop into a Community of Practice. Meetings in the group are conducted in Adobe Connect, and the
recordings of these are stored in the group space, which as mentioned is inaccessible to non-participants. I have been granted full access for research purposes, and will call the group the ‘knowledge development’ group in the following.

Interviews: Interviewee 1 is from LDC Benelux, while interviewees 2-6 are from LDC Denmark. Interviewees 2-6 are co-located in Denmark, and have worked together for 2-6 years. The interviews are currently being transcribed and analysed using Social Network Analysis and Gee’s discourse analysis, but some patterns begin to emerge after listened through the interviews:

- **Hybrid teams.** Interviewees 2-6 are all members of several teams, typically 2-3. Each of these teams are hybrid, including both co-located and dispersed members. Some dispersed members are Danish colleagues and some are employees at the LDC headquarters. For example, members of the Customer Service Team in Denmark indicated that a customer service employee at the global headquarters was part of the team. This supports Al-ani, Horspool and Bligh’s (2011) case study indicating that employees worked in several hybrid teams.

- **Trust and tacit knowledge.** There seems to be a difference between the Danish interviewees in terms of the value they attach to more tacit knowledge. Interviewees 2, 3, 5 and 6 prefer to use the presentations, course materials and marketing materials provided by the R&D and marketing departments of the headquarters. Interviewee 6, who was hand-picked for the knowledge development group mention above, considers it highly important to “get your hands dirty” by developing presentations and marketing materials yourself. He speaks of consultants not doing this as not fully committed or “not willing to put in the required work”, and therefore he does not feel able to truly engage in knowledge sharing with them. I interpret this as an indication of lack of ability trust.

Interviewees 2-5, all cooperate with interviewee 6 in either the consultants team or the marketing team, and all express frustration with his need to “invent the wheel”, as interviewee 3 puts it. His reluctance towards sharing his knowledge was also mentioned by interviewees. This reluctance to share his more tacit knowledge has also been mentioned as problematic by the company CEO in an informal conversation with me, and even became a topic at a team meeting where interviewee 6 was not present. This seems to indicate a lack of benevolence trust towards interviewee 6. Yet all interviewees speak highly of the ability of interviewee 6.

These findings indicate the importance of trust in communicating more tacit knowledge, thus supporting the assumptions presented in section 3.3. But they also indicate the value of the trust model presented in figure 1 (section 3.3.), as different types of trust may conflict with each other, and may not be reciprocated. Social Network Analysis will allow me to analyse these different trust relations in more detail.

- **Using appropriate technology.** While interviewee 6 does not express high ability trust in his Danish colleagues, he expresses high ability trust for the others in the knowledge development group. This supports the finding from the review of virtual team literature that the mediating impact of
technology does not influence interpersonal relations as much as thought in studies focusing on Media Richness theory. Rather than focusing on using the most rich medium to connect people, emphasis should be put on connecting the right people with the right purposes.

As interviews are not yet fully transcribed, the findings presented above should be considered as tentative and incomplete.
Works Cited


Petersen, N. B., & Kampf, C. (Forthcoming). Trust-based knowledge sharing in virtual teams – an integrative literature review.


